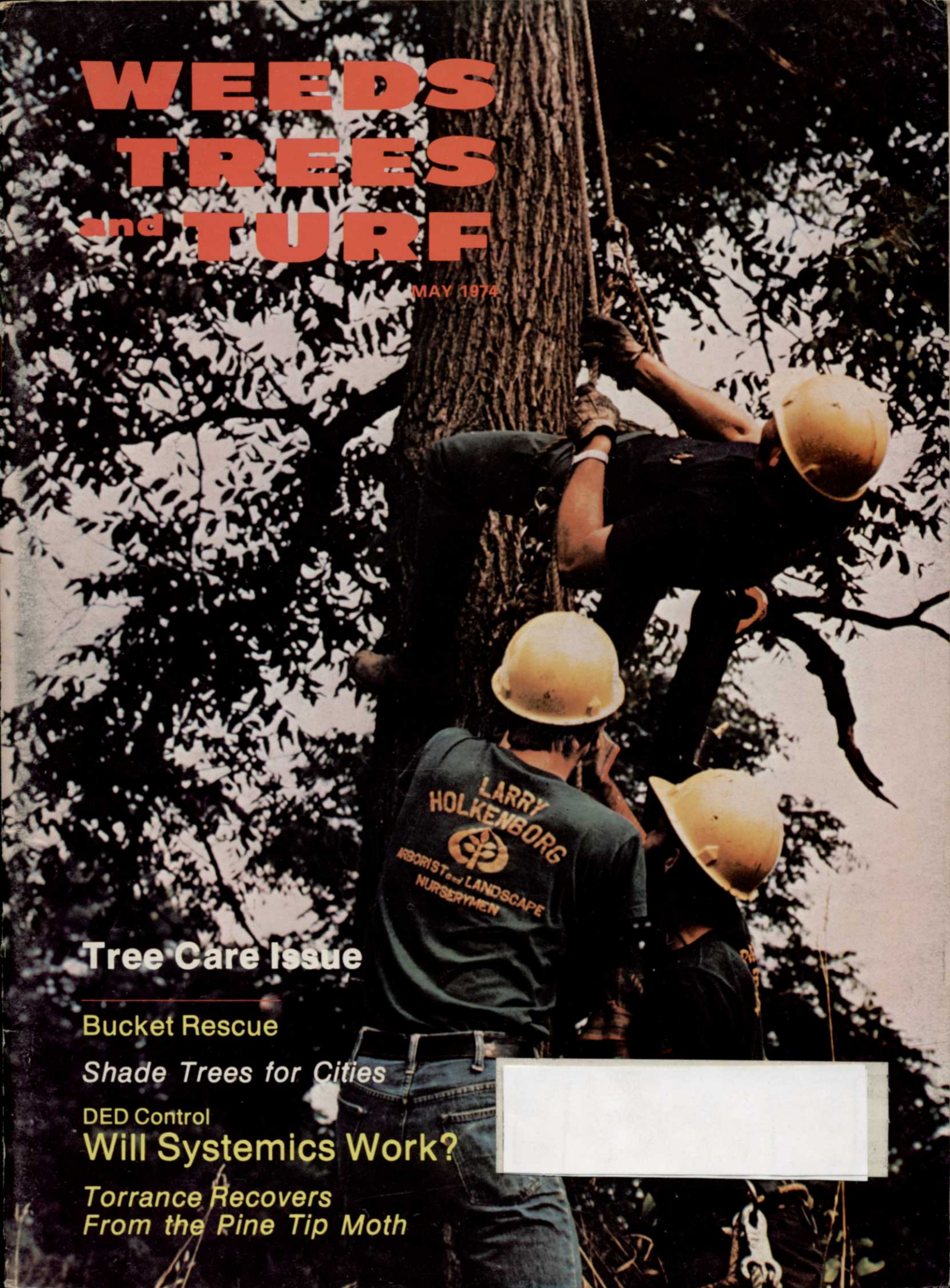
WEEDS TREES and TURF

MAY 1974



Tree Care Issue

Bucket Rescue

Shade Trees for Cities

DED Control
Will Systemics Work?

Torrance Recovers From the Pine Tip Moth

Remember the famous old Turf King?

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WEEDS TREES and TURF®

May 1974, Vol. 13, No. 5

THE COVER—Many services provided by a tree care firm require close contact with the tree. The best way to get close to a tree is to climb it. Here, Larry Holkenborg, Sandusky, Ohio, climbs a walnut tree with the assistance of a couple of his employees.

TORRANCE RECOVERS From Pine Tip Moth — Residents of Torrance, Calif., become aware of the beauty and importance of their street-side trees when an infestation of pine tip moth threatens the trees' health. Robert Schrauben, city tree supervisor, works to rid the community of this pest **13**

DED CONTROLS: WILL SYSTEMICS WORK? — Richard Campana takes an historic look at Dutch Elm disease and reviews the role of the fungicide benomyl in its control **16**

BUCKET RESCUE — A real "how-to" article on the basics of single-man aerial lift rescue. Robert Jones, of Commonwealth Edison Co., provides the illustrations and words for highly interesting reading **21**

SHADE TREES FOR CITIES — Community and urban forestry are here to stay. A couple of pros outline steps for developing a forestry program that combines beauty with utility **26**

JOB PERFORMANCE FROM YOUR EMPLOYEES — Competent supervision, authority, peer relationships, attitudes, etc. They're all part of the psychology of effectively managing your workers. Wallace Mitcheltree takes an objective look at the roles and relationships of the employer and his employees **34**

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Editorial

OSHA and the Sounds of Progress

In a quiet sort of way, we signaled the Green Industry in December 1972 that noise control and abatement would be under increasing government scrutiny in the months ahead. Excessive noise levels are being charged against poor job performance, lack of incentive, and hearing disabilities both temporary and permanent. Congress in an effort to right the wrong has turned the matter over to the Occupational Safety and Health Administration.

Most people in our type of business have little appreciation of what constitutes excessive noise levels. We know that a chipper operating at full throttle produces quite a whine. Or a chain saw buzzing through a tree limb can put a temporary ring in the ears. But, even though hearing may be temporarily impaired, within a few hours we can hear adequately.

Not so, says the government. And to make their point stick, they've come up with charts, diagrams, graphs and other supporting data. One of the charts with which Green Industry businesses will undoubtedly become familiar is Table G-16 — Permissible Noise Exposure. Simply stated, the chart limits workers to a maximum 90 decibels of sound in an 8 hour day.

More on this chart and the impact of noise control can be found in the article by Robert R. Herder, vice president, Asplundh Tree Expert Co. in this issue.

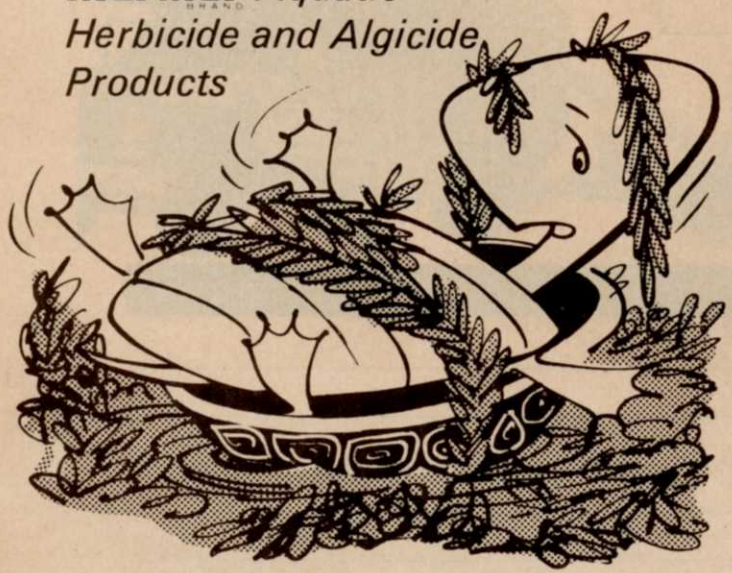
The noise issue is particularly challenging to manufacturers of noise producing equipment. Several leading manufacturers have reported producing equipment whose engines could be muffled well below the noise level, but whose chain or cutting mechanism remained above the acceptable tolerance. Further, just because a piece of equipment meets the noise requirements, doesn't mean that it will always be this way. Noise exposures have been made on new equipment operating under ideal conditions. You can bet your stump cutter that an older chipper or chain saw will produce more noise than a new one. When the OSHA inspector tests your equipment he'll cite you for excessive noise.

If you haven't bothered up to now to provide hearing protection devices for workers, do so immediately. In addition, exercise administrative controls over the labor force. Rotate workers away from noise producing equipment.

Lastly, the place where you can exert a little noise is in Washington. Legislators react first to the loudest squeeking wheel. A few letters, phone calls and thoughts expressed about the Green Industry will assure a substantial footing for your business in the future.

WHEN WEEDS and ALGAE MAKE LIFE MISERABLE...

it's time you found the **Mariner** BRAND *Aquatic Herbicide and Algicide Products*



For information on this new and growing line of 3M aquatic weed and algae control products, write: Plant Care Systems, 3M Company, 3M Center, P.O. Box 33050, St. Paul, Minn. 55101. Or call 305/943-0481.

3M COMPANY

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It's a urea-carbamate compound that gives outstanding extended control over a range of weeds and grasses.

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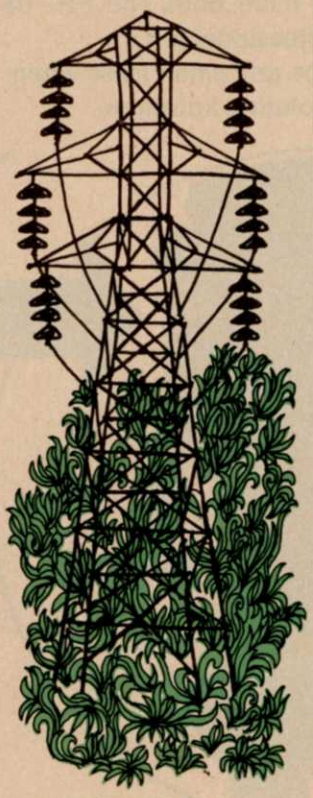
You can spray Tandex or apply it in dry granular form.

Either way you use it, you'll control that costly green tide.

FOR INDUSTRY

FOR RAILROADS



FOR UTILITIES

FOR ROADS

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FMC Corporation, Middleport, N.Y. FMC

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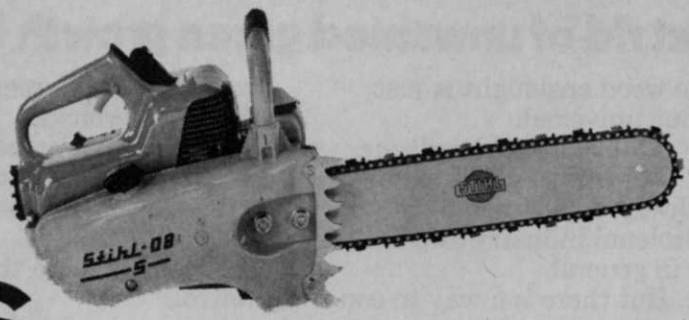

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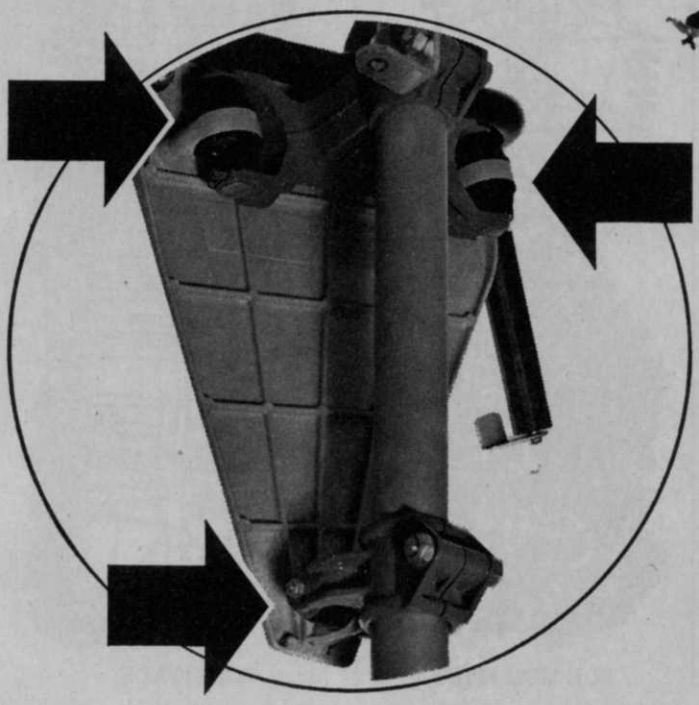

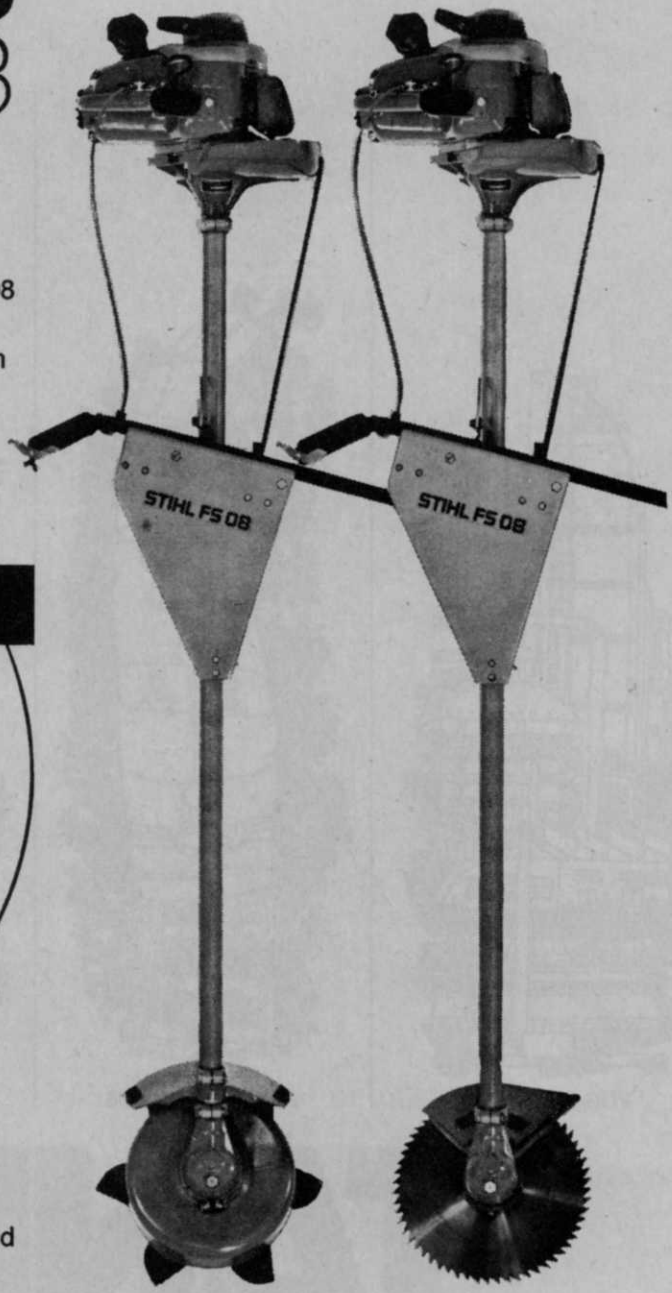

circular saw. **This brush cutter features STIHL's famous AV anti-vibration system that absorbs fatiguing engine vibrations.** Lets you cut longer and easier with less effort.

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THREE IN ONE

I have read the very excellent article on Page 16 in the March issue of WEEDS TREES AND TURF entitled "Gypsy Moth Threat to the Midwest".

Also on Page 16 you had a brief notation entitled "What is BT?". While you have properly described BT I think you should have mentioned there are currently three (3) product brands registered for commercial use. These are Dipel, Thuricide, and Biotrol XK. Thuricide is a product of Sandoz-Wander, Inc. and Biotrol is a product of Nutrilite Products, Inc. which is marketed nationally by Thompson-Hayward Chemical Company.

Both Thuricide and Biotrol were in the marketplace prior to the introduction of Dipel. The omission of all of the products in the field might prove confusing to those people we have been communicating with prior to this article. **Bob DeCicco, Manager Marketing Services, Thompson-Hayward Chemical Company.**

NAME REQUESTED

In an article as a sidebar to "Bent on Better Fairways" in the January, 1974 issue of W.T. & T. it is stated, "Bermudagrass greens constructed according to U.S.G.A. Green Section specifications can easily be converted to bentgrass with a herbicide treatment . . ." Either the writer has his tongue in cheek, or he is referring to a more co-operative type of Bermudagrass than that which has invaded western Oregon from our southern neighbor. If there is a chemical that will do this job, I would like to know it's name.

Thank you for your very fine magazine which in its month to month editions is "right on." **Ken Purkey, Turf Foreman, City of Eugene Park Department, Eugene, Oregon.**

ANSWERED

I believe the reference to chemical inhibition of bermuda in greens converted to bent appeared in material released by Dr. Richard Duble of Texas A & M University.

The DuPont herbicide Tupersan (Siduron) does indeed prevent germination of bermuda seed and encroachment from fairways and aprons, according to a number of experiences (involving conversion of greens to Penncross) reported on in detail in the Nov. 1971 USGA Greens Section Journal. The cases cited in this report come from tests and practical usage on courses in the Carolinas and Georgia.

Texas A & M has done similar work, I believe, and information might possibly be available from Dr. Duble at the Dept. of Crops & Soils, College Station, Tex. 77543.

I heard about Tupersan 3 or 4 years ago. But I never heard of bermudagrass in Oregon until you relayed this letter. Live and learn . . . **Hal G. Dickey, vice president, Siddall Assoc. Advertising.**

NOXIOUS WEED ACT NOXIOUS

I have been wanting to express my "great disagreement" with the editorial which appeared in the February 1974 issue of the Weeds Trees and Turf magazine in regards to the noxious weed law . . .

In essence, my basic disagreement is not in the fact that we need a noxious weed law and that there are several noxious weeds that should be controlled for the good of humanity, motherhood, childrenhood, etc., etc., but the manner in which the law is put forth is completely unfair in my opinion. If you will read close you will see that the proposal is to allow the Secretary of Agriculture, in this

(continued on page 12)

The biggest improvement in sod handling since the industry began!

Mr. Brian Bouchard of Kingston Turf Farms, West Kingston, Rhode Island, says, "Beck's Big Roll Sod Harvesting and Laying System is the single, biggest improvement in sod handling methods since the industry started. It allows a landscaper or contractor to install sod quickly and easily and with a quality not ordinarily attained by using pieces."

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"Our three years' experience with this system indicates that under conditions in New England, we attain a 6% stretch factor in our laying operations. This is an added plus in the sale of sod because the contractor will actually purchase 6% less sod than he needs to cover a particular area."

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And that means that IBDU gives the best feeding control. IBDU's release rate and availability won't drastically change when the weather or soil bacterial activity change.

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PROFESSIONAL PRODUCTS (isobutylidene diurea)

Now that you know you can control your turf's response more closely by using IBDU, and that only Par Ex contains IBDU, it makes a lot of sense to buy only Par Ex products.

That's using self-control.

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City _____ State _____

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Dept. #WTT

Letters

(from page 10)

case Secretary Butz, to add noxious weeds to the current Federal noxious weed list without any public hearing. Now this, in itself, sounds very innocuous, however, it means that he can put any number at any time on the list without any due consulting with sod growers, seed growers, or any type of farmer/producers or even the prople of a certain state who produce a commodity that might have that weed in it and which may not be a problem in a different state. Again, the fact that the Federal government can maintain such direct control over this list without any public hearing, without any consultation with anybody whatsoever, makes this proposal unfair, unwarranted, and undesirable.

It is my belief that any Federal Noxious Weed Act, if adopted:

(1) should exempt seeds intended for planting purposes;

(2) should be limited to the importation of noxious weeds which are new to the United States and are, or if imported are reasonably anticipated to be, of economic importance;

(3) should include provisions adequate to insure that the act will not be administered in a manner which would create an unreasonable non-tarrif trade barrter;

(4) should provide for the necessary eradication of new weeds inadvertently introduced into the US and established in a small area; and

(5) should provide for a reasonable period for comments by interested persons, and for a public hearing if deemed necessary by the Secretary, or if requested by any person before any rule or regulation is promulgated.

Again, I don't disagree with your basic concept of the law, however, I disagree violently with the manner in which the proposal was put forth, that there would be no hearings allowed as is the case now and that the Secretary of Agriculture could, at his discretion at any time, put a weed or many weeds on this list. **Doyle W. Jacklin, Jacklin Seed Company.**

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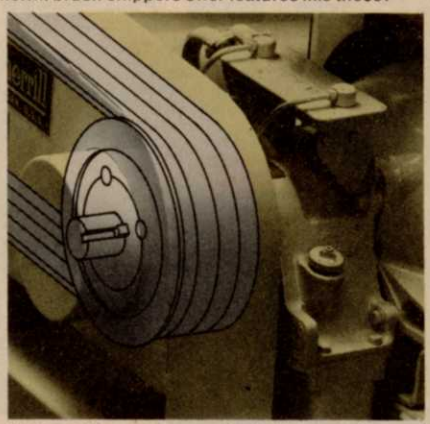

Optional torque converter isolates engine and transmission from cutting shock to minimize maintenance. Makes operation virtually fully automatic; increases operator productive time. Available on all models.

Plus...

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For More Details Circle (126) on Reply Card

For More Details on Preceding Page Circle (141) on Reply Card

Robert Felix

NAA's Robert Felix Named Exec. Secretary

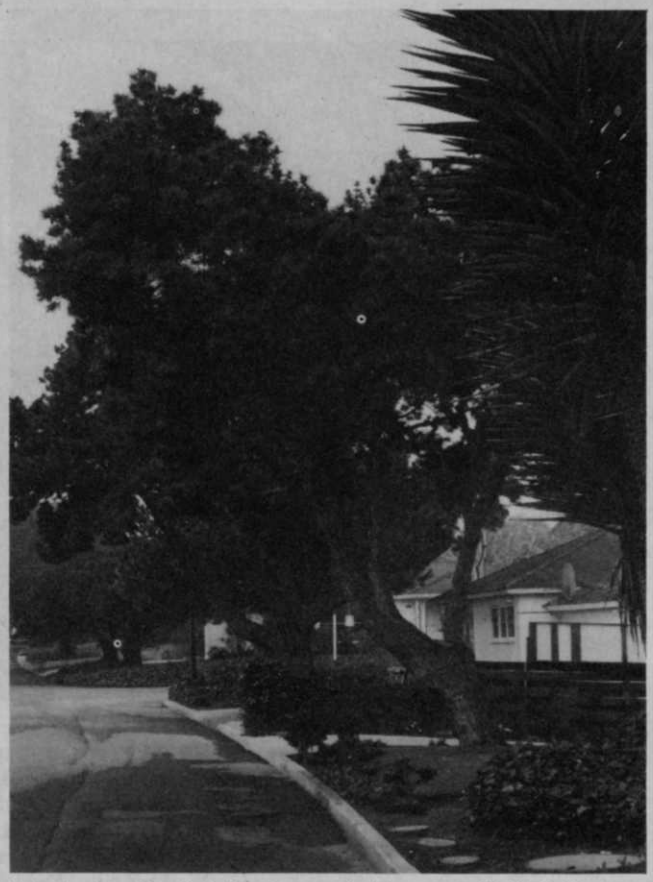
The National Arborists Association, Inc. (NAA) recently appointed Robert Felix as executive secretary.

Felix, Wantagh, New York, has been active in NAA affairs as an officer and director. For over twenty years he was associated with Harder Services, Inc., Hempstead, N.Y.

"My plan is to initiate an aggressive program for the NAA which has members spanning the U.S. in the fields of utility and commercial agriculture, membership development, education, safety programs and a broad public relations program," said Felix.

The NAA moved its headquarters from Washington, D.C. to Long Island, N.Y. in early March.

Torrance Recovers From Pine Tip Moth



A typical residential street scene in Torrance, Calif. A Monterey Pine stands in the middle foreground.

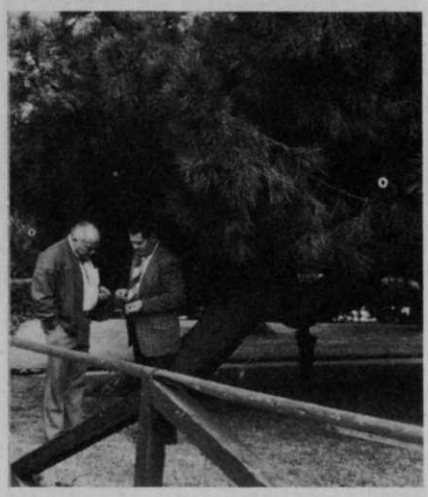
Torrance is the third largest city in Los Angeles county, outstripping in population such better known names as beautiful downtown Burbank, Pasadena, Santa Monica and Pomona.

One need only review previous census figures to see the explosive pattern of growth that has been common to the southern coastal areas of California. Torrance was incorporated in 1921 and its population was 7,280 in 1930, had risen to 22,241 in 1950, expanded dramatically to 100,991 in 1960, and is now estimated at 140,000.

As a city, it is an unusual mix of industrial and residential areas. There are within its boundaries a steel mill, chemical plants, and oil refineries. There is also more than a mile of beachfront and many distinguished residential districts.

Trees can do much to make any city more livable and attractive, and, as early as the 1920s, Torrance developers were planting Monterey Pines and other beautiful conifers and some subtropical trees such as the "Bottle Tree" or Melaleuca (an Australian import). Then, at the time of its fastest growth during the '50s and '60s, the city of Torrance began an active program of planting trees on its street sides and median strips. That program is still continuing with the most common plantings being of Italian Stone Pine and Monterey Pine. Most go into the ground in 15 quart size.

Afflicted pine needles appear light color against the darker, healthy shoots. A pine tip moth infestation can cause the needles to prematurely drop off the tree, clogging the center of the tree and cluttering sidewalks and lawns.



Dean Leedham (left) and Robert Schrauben look over Monterey Pines. Schrauben, tree supervisor of the Torrance street department, works at giving tender loving care to the street-side trees.

The Monterey Pine is so thick with limbs, needles and cones that it is necessary to apply Zectran 2E under 350 to 400 psi to assure adequate penetration.

The subtropical Maleleuca or "Bottle Tree" was originally imported from Australia. It is now common to the southern California area.

Over the past quarter-century of civic expansion, Bob Schrauben, who is tree supervisor of the City of Torrance street department, has worked at giving tender loving care to the street side trees of his city. It is fair to say that he knows them all, by location and name.

Among his favorites are the 45 year old Monterey Pines *pinus radiata* that were planted by a developer in an older district of Spanish Style homes. They were relatively uncared for during the first thirty years of their life, but have now been nurtured and shaped to where they soften and frame the landscape of the quiet residential streets.

A relatively low growing, contorted tree, heavy with cones in certain years, the Monterey Pine is often planted to hold back the movement of southern California coastal dunes. It casts a massive cone of shade and is a typically dark blue green in color when healthy.

When attacked by an infestation of the pine tip moth, which is what happened a few years ago, the needles turn brown and become very unsightly. Prematurely dead needles drop off, clogging up the center of the tree and cluttering sidewalks and lawns. Afflicted trees can be severely stunted or die if the infestation is not stopped.

When it became obvious that the infestation of pine tip moth was a real problem, Schrauben consulted with entomologist Dean Leedham of Target Chemical Company, who advised him to use Zectran 2E in water as a method of control.

The applications are being made from a 600 gallon hydraulic spray rig owned by the City of Torrance street department, with instructions to the operators to thoroughly drench the affected trees from the top down. It is necessary to do this under 350 to 400 lb. psi to make sure of adequate penetration. The Monterey Pine is so thick with limbs, needles and cones that it can effectively mask the spray if not applied at these high pressures.

Applications have been made three to six times a year, beginning in May. They have proved to be very effective and what were once brown and bedraggled trees are resuming their former healthy colors.

Since most of the street side trees are actually on front lawns, the householders have been watching the progress of the battle against the pine tip moth with great interest. They frequently come out to query Schrauben when he is making inspection trips of the area. There have been extremely few complaints about the spraying, with the great majority of the residents voicing approval of the program to save their trees.

To maintain this approval and to protect the safety of workers, Schrauben makes certain that adequate precautions are taken during each spray job. A sea breeze usually springs up each morning during the late spring and summer months at the time that spraying is under way, and the crews quit spraying when the wind reaches 5 mph, to minimize drift.

Torrance has an average rainfall of 12 plus inches and an annual mean temperature of 61° fahrenheit. The highest monthly mean temperature is in August when a peak of only 68.5° is reached. This means that it is an ideal climate for the growth of trees that flourish in moderate temperatures.

With the assistance of Bob Schrauben and his crews, Torrance will continue to be a good place to grow trees, population growth and pine tip moth not withstanding. □

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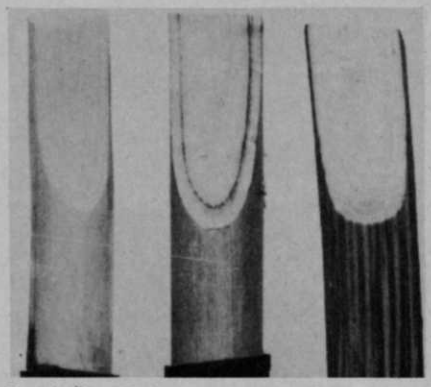
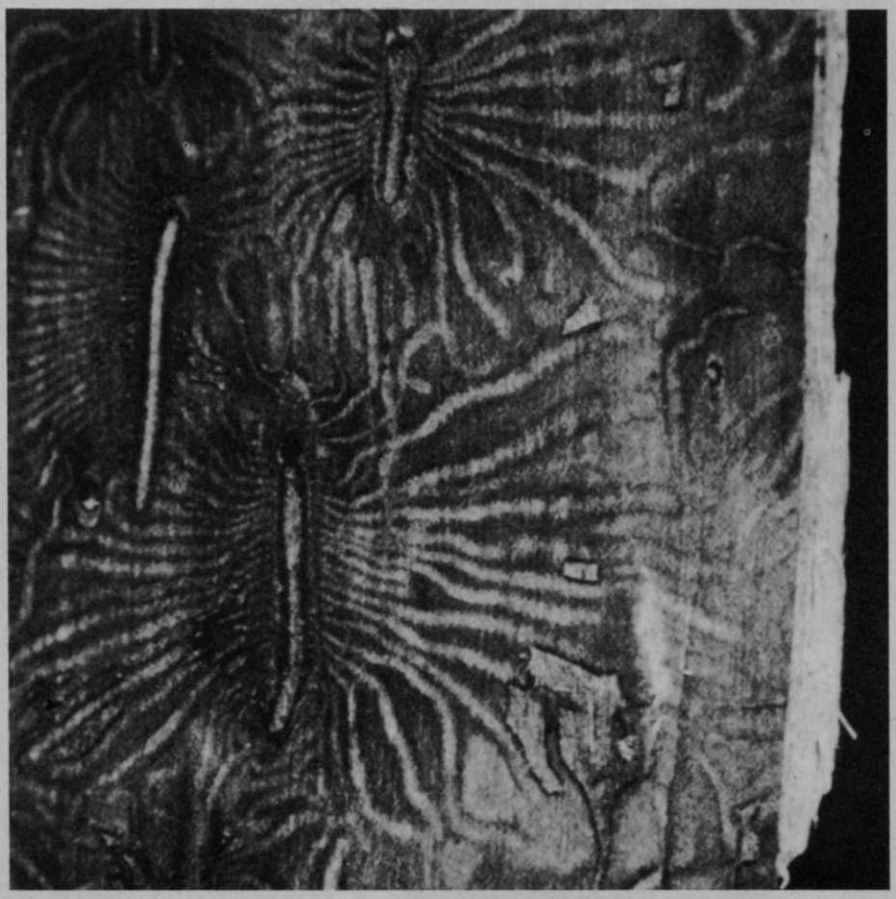
One part of an integrated control method for important specimens is the dormant spraying of methoxyclor. Photos courtesy of Illinois Natural History Survey.



Dutch Elm Disease on twigs. The twig on the left is normal. The wood of the two on the right is typically discolored.



Dutch Elm Disease is carried from tree to tree by bark beetles. These are the brood chambers of one of them.

DED Controls: Will Systemics Work?

By RICHARD J. CAMPANA
Dept. of Botany and Plant Pathology
University of Maine

From its history of spread and development in Europe and North America, there is nothing to indicate that the Dutch elm disease can be contained. The ecological forces at work are such that is is clearly beyond the capacity of man to prevent massive and often accelerating rates of infection in populous elm stands.

These forces involve balances in population dynamics among at least three living species: (1) the elm (usually *Ulmus americana* L.); (2) at least one, and sometimes two, insect vectors (the introduced smaller European elm bark beetle, *Scolytus multistriatus* (Marsh.), or the Native elm bark beetle, *Hylurgopinus rufipes* (Eichh.); and (3) the casual fungus (*Deratocystis ulmi* (C. Buisman) Moreau). In a broad sense Dutch Elm disease is a man-made problem.

Once sporadically distributed mostly along streams, the American elm was planted extensively as pure stands in cities and towns throughout eastern North America as an urban or suburban "tree monoculture." Having established the elm as "the" urban tree over all others, inadvertently we next introduced from Europe (*circa* 1905) the European elm bark beetle, and later (*circa* 1930) at least one virulent strain of the casual fungus.

Thus, the basic factors involved in this devastating epidemic of elm populations are: (1) extensive stands of closely spaced, highly susceptible trees often connected by root grafts; (2) an insect vector capacity enhanced by addition of the European beetle; and (3) presence of the causal fungus. These were combined under climatic conditions favorable to the proliferation and development of both the pathogen and its vectors.

The disease is not restricted to urban elm stands; most native elms of field, stream and forest are highly susceptible and just as badly affected. The difference is that volunteer elms on open land develop naturally from seeds cast annually, whereas groups of elms lining streets, or used as specimen trees were usually established through plantings of colnal stocks, and most often at one specific time.

Thus, there are significant differences between natural and horticultural elm populations with respect to site, spacing, numbers, age, variation in susceptibility, etc.

Therefore, for various reasons, most urban elm populations may be reduced beyond restoration, whereas natural ones will be replaced in part by natural seeding. The new natural populations will be reduced in size, with little or no regularity of spacing in spite of what man does or does not do in attempts at disease control. Thus, whatever we do is seen either as a delay of disease inci-

dence in relatively small selected elm populations, or as the treatment of individual trees of sufficient value to warrant intensive control efforts.

In 1956,[1] I tried to design a blueprint for "community-wide control" of the disease with only two control methods (both indirect). But now I see little prospect that satisfactory disease control (saving most of the elms) will be achieved very often or for very long throughout extensive elm populations. Such control now appears possible only with complete and intensive application of at least five control methods on limited numbers of highly valued trees.[2]

These methods are: sanitation; dormant spraying; severance of root grafts; early removal of single-branch infections; and fungicide applications for internal action. At least two of these methods, (early surgery, and use of systemic chemicals) are direct.

The concept of integrated control is still valid even where systemic chemicals can be used effectively to help prevent infection, because no single control measure has been demonstrated to be completely successful. Even if the application of systemic chemicals to diseased trees could result in complete recovery, re-infection might well nullify original curative efforts. At least with present knowledge and in the absence of greater certainty in the efficacy of chemical treatment, an integrated control approach has the merit of enhanced security.

Based on early field tests, the two highly promising chemicals for the control of Dutch elm disease at the present time are Benlate benomyl fungicide and an antibiotic known as Nystatin.

IS BENLATE SUITABLE?

For at least the past thirty years plant pathologists have sought in vain a suitable systemic chemical to prevent or arrest Dutch elm disease. Hundreds of chemicals highly toxic in the laboratory against *C. ulmi*, failed to arrest the fungus in inoculated elms. Some of the reasons explaining such failures were reviewed in an earlier paper[3] on the requirements for a suitable systemic fungicide.

Within the past five years Benlate was found to be effective in preventing Dutch elm disease with applications by soil amendments, trunk injections or foliar sprays. A use permit issued by the U.S. Environmental Protection Agency in March of 1972 for the control of Dutch elm disease, was restricted to applications by trained and licensed arborists using specific methods of application. How well does Benlate meet requirements for a suitable systemic fungicide?

1. *Is it toxic to the fungus in elm tissue?* The chemical is quite effective in preventing infection, but most results indicate only partial success or failure in arresting the fungus after infection is well established.

Post-infection treatment with Benlate applied by Maujet injection is often not recommended if more than five percent of the crown is visibly wilted before treatment. However, most published data are based on use of the chemical in an aqueous suspension, in which only a minor fraction of the fungicide is in the dissolved state! The particulate matter in the suspension clogs vessels through which the solubilized fraction must move to get where it can be most effective. Thus, Benlate in suspension appears to have a low capacity for being widely systemic. *(Editor's Note: Research conducted by Dr. T. C. Ryker and others indicates that the xylem vessels appear to be about 11 microns in diameter. The particle size of Benlate is about two to four microns in diameter. Thus, it would appear that the chemical could move through the xylem tissues without clogging.)*

But the degree of fungitoxicity in elm tissue is still unresolved, since there are no carefully designed studies to answer this question.

Tests on a new, solubilized Benlate, especially those involving pressure injection, have been initiated too recently to provide an answer here. My experiments in using solubilized Benlate with pressure injection in 1972 produced evidence that the fungus may not be killed completely with post-infection treatment. With good distribution, it is easy to visualize death of fungus spores as they are exposed in open vessels; however, it is also easy to visualize impacted hyphae of the causal fungus deep in cellulose layers of wall tissue of cells not contiguous to open vessels.

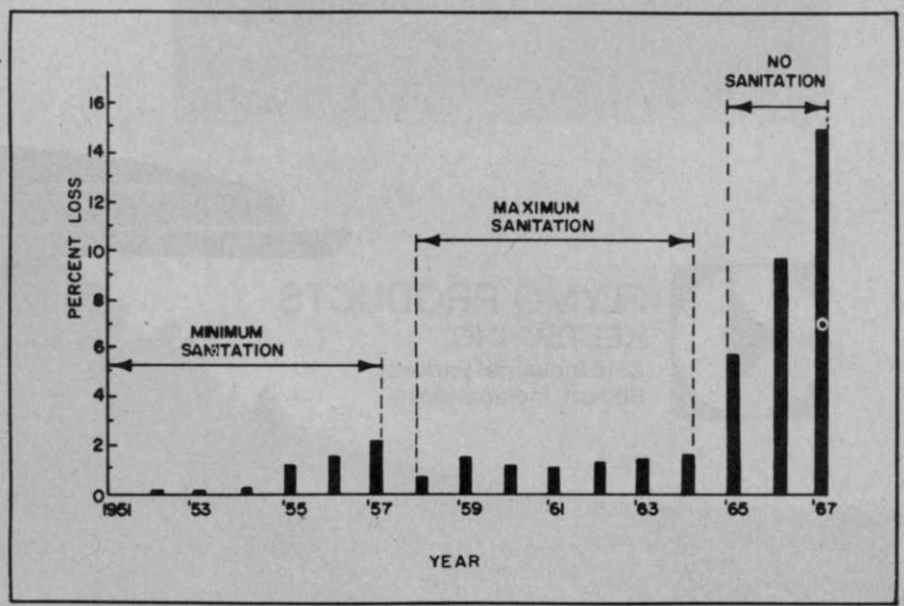
Can we be certain that such hyphal structures will be killed? Is it possible for the fungus to "ride out" the Benlate "storm" in such tissues until the chemical loses its punch, and then emerge from the "woodwork" to continue the infection process? Will the disease symptoms so visibly arrested in July and August appear, or fail to appear in the following June? These and many other questions have yet to be answered. We can say with confidence at present that fungitoxicity in elm tissue has been demonstrated beyond question only before an infection is well established.

2. *Is Benlate stable; does it or its derivatives retain toxicity?* All of the evidence points to its early transition to MBC (methyl-2-benzimidazole carbamate) reported to be fully as toxic as Benlate *per se*. On this point, the fungicide clearly meets the requirement.

3. *Is Benlate mobile?* There seems little question here that it is; certainly in upward mobility, reliable bioassay tests show that fungitoxicity can be detected in strength far from points of injection. However, as noted above, mobility can be impared by clogging of vessels, and there is evidence that this happens often with non-solubilized material. But even though mobility is now assured in the new solubilized form, can we be certain that Benlate will get into all of the branches where infection could be present? Unfortunately, even with pressure injection of the solubilized form, bioassay tests indicate difficulty in detection of fungitoxcity in many small branches where infection is possible.

4. *Is Benlate residual? Does it remain long enough in the plant system to be effective?* There is no body of reliable data on effective longevity of toxicity in elm tissue, even though it is reported to persist in some plant tissues up to 18 weeks. Unfortunately, the same physical factors that favor mobility may favor

(continued on page 71)



Sanitation is still one of the most important elements of an integrated control program. Much greater losses may be expected if it is abandoned. Photo courtesy of R.J. Campana.

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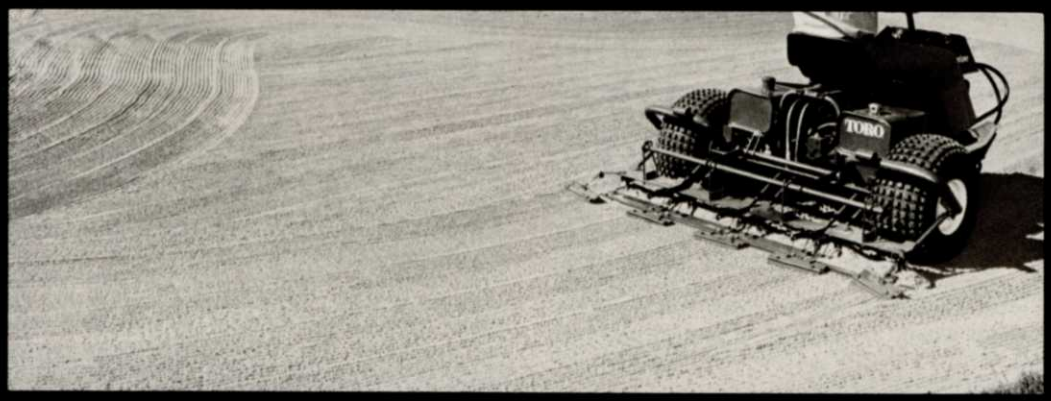

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SPECIFICATIONS*

FRAME: All welded tubular-steel construction.
WHEELS: Standard demountable — interchangeable for three positions. 21 x 11:00-8 tires. Extra low-pressure, 4 psi compass tread.
ENGINE: Kohler 8 hp Model 181 SP. Cast iron block, dry element air filter, fuel pump. Rubber mounted.
STARTER: 12 v. Bendix-drive electric starter is standard. Key switch controlled from dash.
DRIVE: 3-wheel hydraulic. Engine-mounted variable-displacement piston pump through flexible coupling to 3 Ross Torqmotors® on wheels.
STEERING: Automotive-type steering wheel. 6:1 reduction ratio.
SEAT: One piece molded with back support. Adjustable forward and back.
OPERATOR CONTROLS: Key start, hand throttle, hand choke, ammeter and hour meter on dashboard. Foot pedal controls forward/reverse and speed. Hand-operated hydraulic control lifts and lowers rake, spiker or grader. Valve disengages pump for towing or pushing.
FUEL TANK: 2.7 gallons.
HYDRAULIC RESERVOIR: 1½ gal.
HYDRAULIC OIL FILTER SYSTEM: 10 micron replaceable element.
SPEED RANGE: Infinitely variable to 5½ m.p.h. maximum.
TURNING RADIUS: Machine turns on zero radius to the left or right.
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DIMENSIONS: Width — 58½". Overall length — 62½". Wheel base — 40". Height — 42". Weight — approx. 650 lbs. with fluids.

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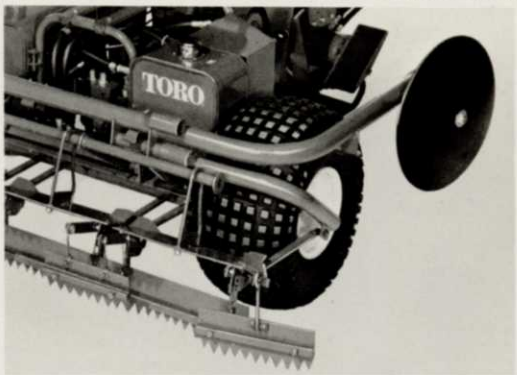


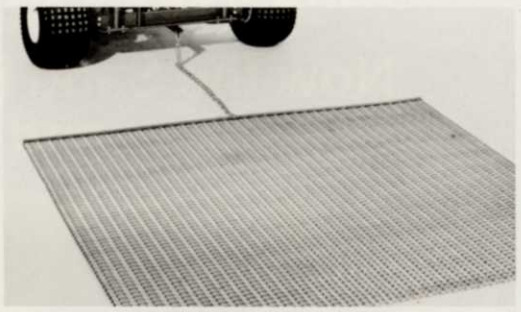
OPTIONAL MAINTENANCE EDGER

SPECIFICATIONS*

Model No. 08875
Hydraulically raised and lowered. Four forward conditioning sections utilizing subsurface bar for breaking crust. Nine finishing sections. Angle of conditioning bar adjustable for depth of penetration. Finishing sections have adjustable weights. Width: 68".

SPIKER

Special Toro profile-tooth blade spikes cleanly without ruffling turf (hold-down fingers prevent lifting turf, too, so greens are immediately playable after spiking — no rolling or cutting needed). Extra large tires provide flotation equal to the Greensmaster® 3, and the transfer spring puts up to 22 lbs. per blade across the 58 inch spiking reel width for maximum 1¼ inch penetration. 3-point hitch makes spiker simple and quick to attach and detach. Optional drag mat (model No. 08844) and hitch kit (model No. 08833) turns incorporation of top dressing into an easy job, and crushes and crumbles aerifier cores.



OPTIONAL DRAG MAT

SPECIFICATIONS*

Model No. 08855 without hydraulic cylinder.
Model No. 08866 with hydraulic cylinder.
WEIGHT: 280 lbs.
UNIT WORKING WIDTH: 58".
WORKING DEPTH OF SPIKER: 1¼" maximum.
SPACING OF BLADES: 2⅜".
NUMBER OF SPIKE HOLES: 21 holes per square foot.
SPIKER BLADES: High carbon steel — .105 inch thick. Special profile design for minimum disturbance of soil surface when spiking. 8 points per blade, 24 blades. 7¾" dia. blade point to point.
POWER: Ground driven.

FINISH-GRADER

Spring-loaded Finish-Grader has closed ends to prevent windrows, is automatically self-relieving across entire width of scraper as machine travels forward to leave a smooth, even surface. Hydraulically controlled up and down for ease of operation and control of grading and scarifying depth. Heavy-duty steel teeth can be dropped out of transport position for soil conditioning and scarifying loosened soil. Hi-flotation tires and balanced weight distribution of Prime Mover means less compaction than with a heavy tractor when fine grading, shaping and contouring seedbeds. Rugged construction, simple design means long life, low maintenance.

SPECIFICATIONS*

WEIGHT: 200 lbs.
DIMENSIONS: Length: 10 inches. Width: 66 inches. Height: 10 inches.
LIFT: Hydraulic.
DESCRIPTION: The Sand Pro Finish-Grader accessory consists of a box plow and scarifier designed to quick mount to the Sand Pro. The unit is capable of light ground maintenance and grooming, replacing hand shoveling and raking on ball diamonds, on golf courses, and for landscaping in small areas where use of larger machinery is not feasible.

*Specifications and design subject to change without notice. The Toro Company, Bloomington, Minnesota. Printed in U.S.A.

Bucket Rescue!

11 Steps To Safety

By ROBERT E. JONES
Administrative Assistant
Commonwealth Edison Co.

The two most basic requirements for rescuing a workman in a one-man bucket are to get the man down to the ground and out of the bucket so he can be cared for properly. He may be injured, unconscious, or impaired in some manner. His life depends on the actions of those nearby or his fellow workers.

The real problem in man rescue from single buckets exists when there is not several people present to assist in resuscitation efforts. If enough help were available on the ground, there would be no difficulty. In many cases, however, crews consist of only two men. The bucket they use is generally equipped with a mechanical, constant bucket-leveling system. Thus, the purpose of this article is to show how rescue is possible under these circumstances.

There are many different types of single bucket trucks in common use. The individual or firm contemplating the purchase of a bucket must consider the possible complications in retrieving a man from the selected aerial device should the need arise. If you are a user of a bucket, it may be necessary at some point and place for one man to rescue another. Full knowledge and understanding of the problems is important in making a quick rescue. Further, if the elements do not presently exist for easy rescue in your equipment, it would be my wish, to stimulate thought and action on the parts of manufacturers and users, to incorporate or "build in" those features necessary to provide for quick and effective rescue.

Let's look at a few situations involving single bucket equipment using machines with mechanical leveling. Here are some reasonable possibilities that might lead to problems in rescue.

- The worker could be having a physical seizure of some kind, a heart problem, a stroke, or loss of consciousness, etc.
- The unfortunate fellow may have been injured seriously with a power saw; he is in pain and bleeding. He is incapable of operating the controls from his location.
- The tree trimmer may have sustained an electrical shock. He has lost consciousness. He may or may not be breathing; his heart may be in fibrilation. We don't know what his problems are, but we do know that we must get him down.

In the event of any emergency, the other crew member will have to get to the master controls and commence the lowering procedure. Seldom is there difficulty in bringing the man down because he can usually be brought down by the same route he went up.

However, as in the case with some buckets, the machine does not have the capability to set the bucket on the ground. Unless the bucket has been modified by opening one side, it will be difficult to excise the wounded man. One possibility might be to bring the bucket down to the level of the cab shield, but the problem still remains. Perhaps the man could be pulled up on to the pro-

---

Figure 1: A treeman has sustained an electrical shock. He is unconscious. His heart may be in fibrilation. He must be brought down.
Figure 2: One possibility might be to bring the bucket down to the level of the cab shield. Perhaps the man could be pulled up onto the shield.
Figure 3: Here again the workman is injured and needs help. The other crewman is in the process of lowering the bucket to the ground. It is impairative that the master controls always be readily accessible.
Figure 4: The bucket has been lowered to the ground so the injured can be easily reached. Perhaps his partner could lift or pull him out or get help.
Figure 5: The injured man may have heart and respiratory problems. He must be removed from the bucket so proper resusitation procedures can be applied.
Figure 6: The rescuer pulls the victim through the side opening feet first. This modified bucket approach requires the man in the bucket to wear a safety belt and strap whenever aloft. This must be detached before rescue can be completed.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

tective cab shield, but what would be done with him them?

Even if the unit has the ability to lower the bucket to the ground, the injured man may be too weak to climb out on his own power. His partner must either lift or pull him out or obtain help to accomplish the job.

Similarly, a lineman or tree trimmer who accidentally receives an electrical shock, will be slumped down in the bucket. He may have heart and respiratory problems. He must be removed from that bucket so proper resuscitation procedures can be applied. It would seem logical to simply reach in and pull him out. But he's too heavy.

True, but in emergencies of this kind, the rescuer can develop superhuman strength and is able to perform great deeds and unbelievable feats. Don't rely on this superhuman capability, though. It's better to be "for real" because sometimes it just isn't possible to develop this strength. Consider this example.

We have a two man single bucket crew. The big man is the boss; the little fellow is the bucket man. They've been busy with their daily work and suddenly the man in the bucket is in trouble. Something has happened and he is unable to function. He can't operate the controls and must be brought down and removed from the bucket. In this instance, the boss because of his size is able to grab hold and lift the 135 pound tiger right out of the bucket. No problem exists here.

However, suppose the situation is turned around. The little fella is the boss, as is sometimes the case. The big man is in the bucket. He's in trouble and he needs help. Can the little man develop enough superhuman strength to lift the big man out of the bucket? It is practically a physical impossibility for the small man to lift those 240 pounds of dead weight out of the bucket.

There has to be a better way, and there is.

In my company, this situation has been recognized as a potential safety problem. And it was established that a method should be developed to expidite rescue in all two man single bucket crews.

While looking at all the factors involved, we concluded that the real problem in retrieving a man from a single bucket was the size of the man himself. Therefore the rescue methods would have to provide for the "big man" especially, who could not normally be lifted or manhandled out of the bucket by his co-worker.

Two obvious possibilities seem to exist for getting the big fellow out, other than lifting him upward. The bucket could be tipped so he would practically fall out, or at least so he could be pulled out horizontally. Or one side of the bucket could be modified, so the man could be removed out the side.

On units that do not reach the ground, "manufacturer approved" modification of the bucket by opening one side seem to be a practical approach to the problem. The crewman on the ground can get into the bucket behind the injured, lift him slightly, then push his feet and body out through the opening and lower him to the ground.

Another variation of this approach is where the rescuer pulls the feet of the victim through the opening first, then partially lifts and pulls the man out bodily.

A note of caution: This "modified bucket" approach requires the man in the bucket to wear a safety belt and strap whenever aloft. It must be detached before rescue can be completed. *(Editor's Note: American National Standard Z133.1 specifies that "aerial buckets, platforms, or booms of such equipment shall be provided with some means of anchorage to which a safety belt or lanyard can be secured.")*

The other method of man rescue involves "tipping the bucket." Some buckets have this feature built into the system. There would be no problem getting a man out in this case, even if he were unconscious. However, most single bucket units do not have the capability of tipping; they come from the assembly lines with the mechanical leveling systems "built in."

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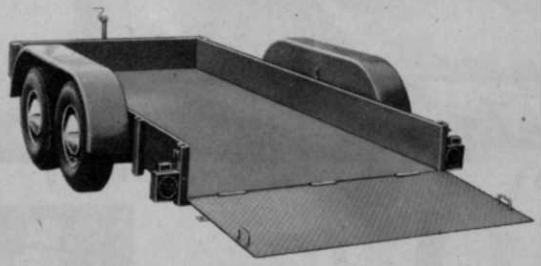

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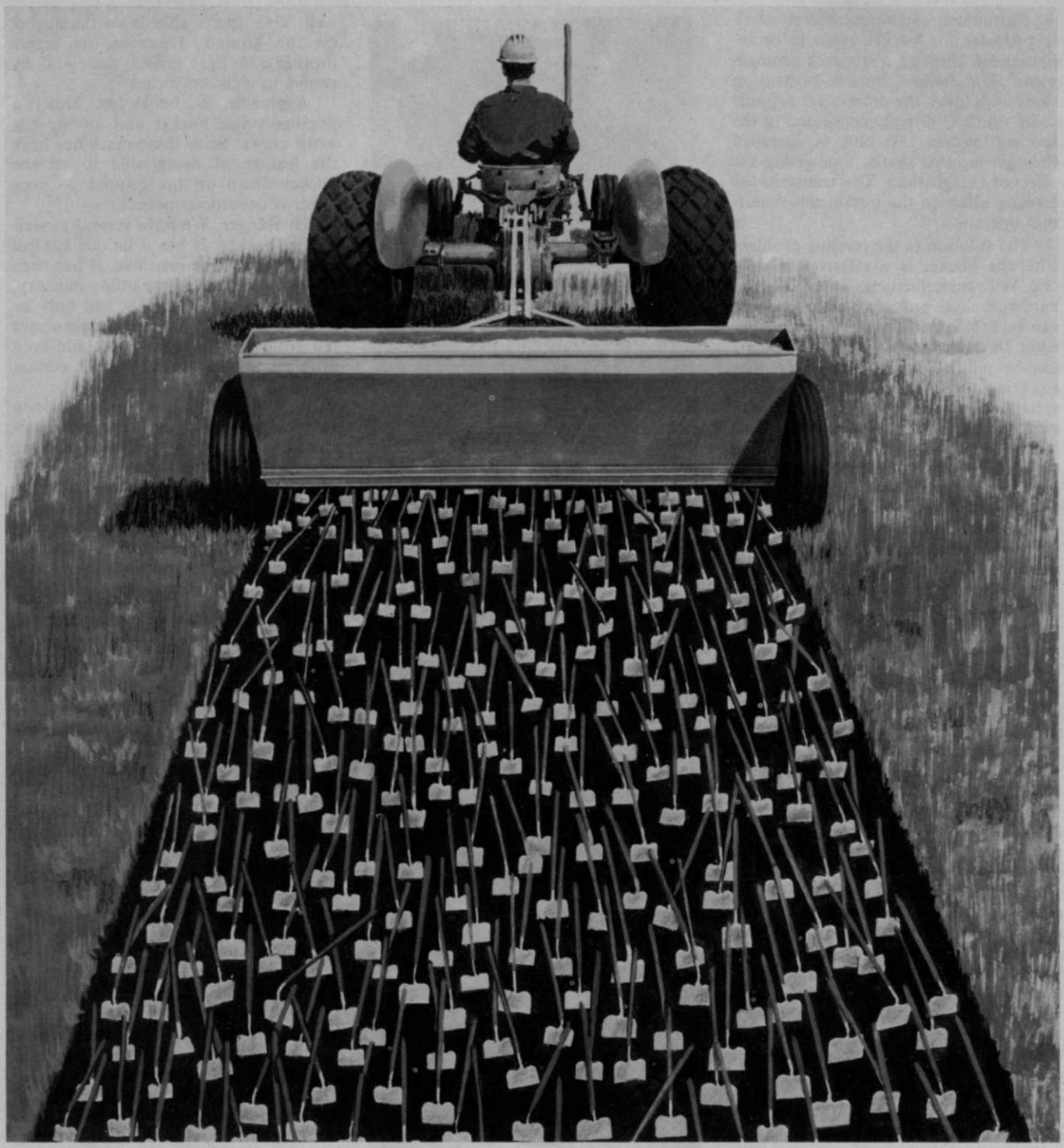

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Fortunately the manufacturer usually provides for bucket removal or replacement, through a slipshaft arrangement. The hollow bucket suspension shaft slips over the solid steel support shaft which is directly connected to the leveling system. A bolt is installed through the two shafts, thus giving the effect of a single shaft. This transmits the leveling effect to the bucket under normal operation.

The solution to the leveling problem with the bucket is a relatively simple one. With manufacturers approval, case hardened steel pull pins with retainers can be substituted for the bolt arrangement through the two shafts. The pins can be pulled quickly and easily, disengaging the bucket from the leveling system. To insure ease in pulling, the pins should be removed, cleaned and lubricated weekly.

In event of emergency, the second man pulls the pin and the bucket tips readily to facilitate removal.

At the beginning, I stated that there were two basic requirements for man rescue involving single bucket trucks. First, it's necessary to get the man down to the ground; second, he must be removed from the bucket.

The only way the second requirement can be accomplished is by another crew member operating the master boom controls in the lowering procedure. For the man on the ground to perform effectively, he must be familiar with the lower control of the particular unit to which he is assigned. The controls should be clean, workable, and clearly identified so that no mistaken moves will be made at the time of an emergency.

The lower controls should have the ability to stop any unwanted boom movement caused by an injured person at the bucket controls. Further, they should have the ability to override and take control away from those at the bucket. It is important too that the master controls be accessible and easy to reach quickly. Tools, equipment, work area protection signs, etc. clutter the area and make it inaccessible.

Many single bucket trucks are available. All are built for the purpose of getting a man up in the air, safely, easily and quickly, and in a position to perform his work. At Commonwealth Edison, we use six different makes. The following is a review of these machines and their capabilities for rescue:

McCabe-Powers, 35 feet. This machine does have the flexibility to set the bucket on the ground, in back of the truck.

Pitman Hotstick, 46 feet. We use this bucket in overhead line construction. It is essentially a double bucket unit, with only a single bucket installed. It can be lowered to the ground if necessary.

Holan, 27 feet. This is a little hand model for the speedy troublemen, or to facilitate overhead line construction as well. This unit is able to set the bucket on the ground. However, its bigger brother (36 feet) misses that goal by twelve to eighteen inches.

Asplundh, 36 and 45 feet. This is a popular single bucket unit among our work crews. Both these machines have the feature of being able to set the bucket down on the ground — even lower if conditions permit.

Hi Ranger. We have several models of this bucket. It has a unique control system which tree men like. It has been doing a good job in the utility industry, too. However, the bucket can only be lowered to a point about 30 inches above the ground. This limitation could be a problem in man rescue, under certain conditions.

Hi Arm. This bucket doesn't belong in the same class as those above. It is not an articulating boom type. Rather, it has a telescoping boom. It seems to be well adapted to light line construction in tight places. The bucket can be lowered to the ground, and it comes equipped with a power, bucket tipping feature. This can be of great benefit in removing an injured or unconscious person. □

Figure 7

Figure 8

Figure 9

Figure 10

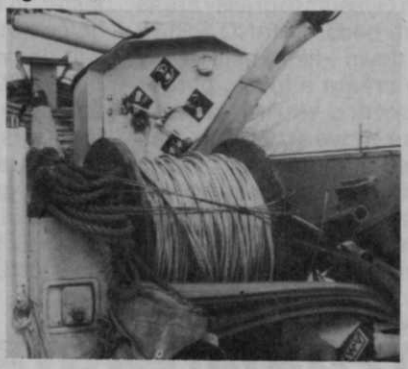

Figure 11

Figure 7: Most single bucket units are equipped with mechanical leveling systems. In the event of an emergency where it is desirable to tip the bucket to remove the injured worker, the leveling system presents quite a problem. One solution was to replace the slip-shaft bolt arrangement with case hardened steel pull-pins with retainers. Then, all the second man has to do is pull the pin and the bucket will tip readily. All equipment modifications should be cleared with the manufacturer.

Figure 8: The pins can be pulled quickly and easily, disengaging the bucket from the leveling system. To insure ease in pulling the pins, they should be removed, cleaned and lubricated weekly. After the bucket has been tipped, the injured treeman can be carefully removed.

Figure 9: In a situation where a small man might be slumped down in the bucket, with most of the weight being low, this machine can be operated from the upper controls to further lower and tip the bucket to a near horizontal position.

Figure 10: The quick-tip pull pin arrangements on all the various machines employ the principle of freeing the hollow bucket suspension shaft from the solid steel support shaft. This unit shows the use of a double pull-pin. Only ½ inch holes were provided in the shafts and the manufacturer felt the use of only one pin would be inadequate.

Figure 11: This is an example of what to avoid. In case of emergency these master controls would be difficult to reach and operate effectively.

"Jobe's TREE FOOD SPIKES save time, labor and money."

says Delos A. Bailey, owner of Del-Mar Landscaping Service, Bloomington, Minn.

George Mann, left, and Chris Danielson, Del-Mar Landscaping Service, Bloomington, Minn., fertilize their customers' trees with Jobe's Tree Food Spikes.

"Good help is hard to get. Up here in Minneapolis we're busy both summer and winter—with snow removal a big job in the winter. Mowing, tree and shrub planting, trimming and fertilizing keep us busy in the summer. That's why we like Jobe's Tree Food Spikes for fertilizing trees. The analysis is right —*and they sure save time.* Jobe's are simple to use: just one spike per inch of trunk diameter."

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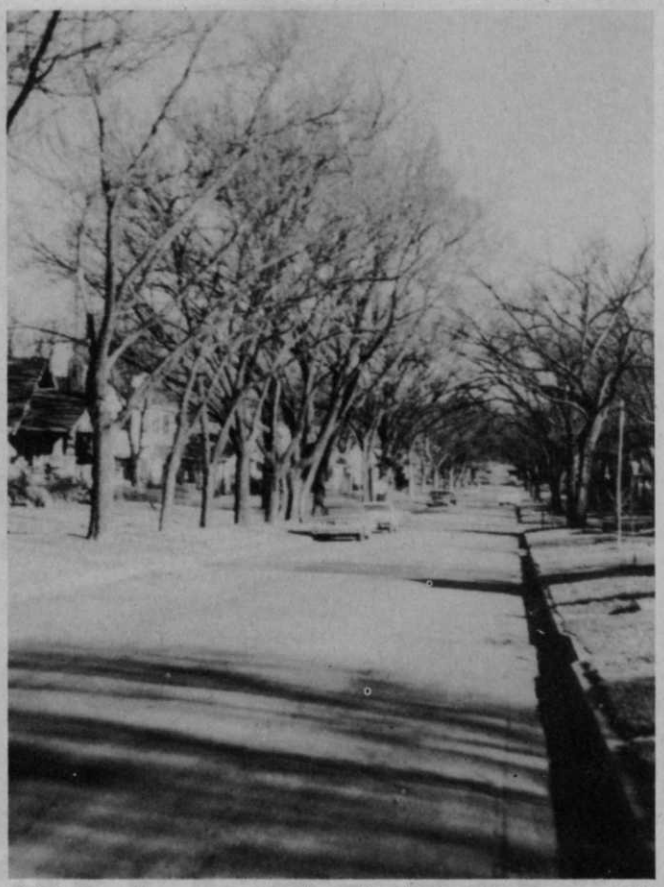
Shade Trees For Cities

A Community Forestry Program



Dutch Elm disease appeared on the Kansas treescape nearly fifteen years ago. As the disease spread, local governments became aware of the need to practice urban vegetation management.

By DR. JOHN W. ANDRESEN
Professor of Urban Forestry
University of Toronto
and
PHILIP R. DOLBERG
Montana Div. of Forestry

Community and urban forestry are here to stay. Earlier arboricultural practices coupled with forestry management expertise furnish the basis for a new branch of forestry that concerns itself with the effects of people on trees and more important, the impact of trees on people.

In essence, community and urban forestry services are socially oriented. Foresters now provide the general public with the multiple benefits offered by trees, shrubs and associated vegetation within an urbanizing environment.

Today and tomorrow there is and will be escalating public demand for better and more comprehensive management of our urbanized invironment.[10 15 19 21] In response, an increasing number of state forestry commissions, forestry divisions and extension services are developing new and innovative community and urban forestry assistance measures. Notable among them are programs in Florida,[20] Georgia,[16 17] Kansas,[1 19 11] Maryland,[4] Michigan,[3] and Missouri.[5 6]

Encouraged by Congressional and Presidential approval of the Sikes Bill, P.L. 92-288, in 1972, the foregoing agencies and their brother organizations throughout the U.S. have initiated or are planning cooperative assistance practices. State forestry leaders were cued by the language of P.L. 92-288 which specifically calls for ". . . the protection, improvement, and establishment of trees and shrubs in urban areas, communities, and open spaces."

As authorized, an annual Federal appropriation of $5 million will be made available to state forestry organizations for community and urban forestry. To provide national coordination of programming and funding, the Act will be administered by the Secretary of Agriculture through the state and private forestry division of the Federal Forest Service. However, to make the total program work, continuing cooperation and reliable communication will be essential between state and private forestry, state forestry organizations, and leaders of local governments.

Kansas, in particular, has organized a state forestry division-state extension service program to encourage maximum participation by local community tree boards or commissions. By 1972, some 42 communities had created City Tree Boards,[11] with more added in 1973.

An earlier stimulus, however, was prompted by the unwelcomed appearance of the Dutch elm disease on the Kansas treescape. About 15 years ago,[22] as the disease began to infect an increasing number of trees, local governments became aware of the need to practice urban vegetation management. Cities and towns ill-prepared to control the disease lost most, if not all, of their American elms and had no plans to remove or replace the dead trees. More enlightened communities as Cottonwood Falls, with a population of 1000, even with a limited budget, have inventoried their trees to determine condition and values (Table 1). They also have forestry plans for the future.

Tree surveys are typical basic components of information upon which a city tree board bases its decisions. In Kansas, according to Grey,[11] the city tree board seems to be the best approach to initiate and instrument programs in individual communities. Grey also advises that action begins ". . . by explaining the program to the community governing body (usually the city commission or council) of towns and cities throughout the State, and recommending that each create some legal body to be responsible for a community forestry program." Thus, the overall Kansas community forestry program is composed of cooperating communities that sponsor a city tree board.

CITY TREE BOARD

A City Tree Board should be ap-

The grass is always greener...and with good reason

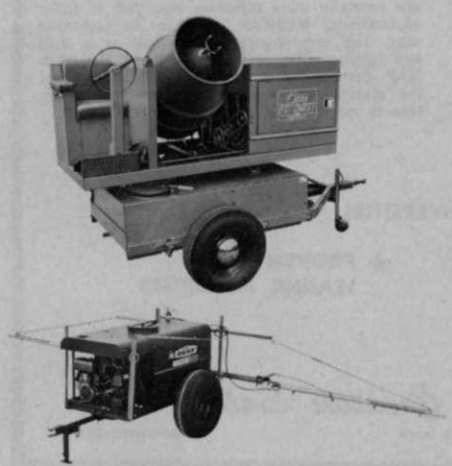


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TABLE 1. Tree Survey Statistics for community of Cottonwood Falls, Kansas

Species	No. of Trees	Avg. Age	Avg. Dia.	Percent of Species Total Good[1]	Fair[2]	Poor[3]	D&D[4]	% of Total Trees	Value[5]
American elm	496	45	17	24	29	28	19	30	$137,808
Chinese elm	407	30	12	41	29	30	1	25	62,140
Red cedar	129	50	12	29	50	21	1	8	63,028
Green ash	100	40	13	49	30	20	1	6	57,326
Hackberry	92	45	12	72	21	8	0	6	59,933
Catalpa	79	45	16	18	42	41	0	5	24,019
Black walnut	56	15	6	84	14	2	0	3	10,383
Silver maple	44	20	9	55	18	25	2	3	7,656
Redbud	24	10	5	71	25	4	0	1	3,471
Red mulberry	24	35	15	46	25	29	0	1	10,992
Osage orange	22	45	17	50	50	0	0	1	18,877
"Fruit"	21	10	5	57	24	19	0	1	2,598
Pin oak	21	15	6	67	5	24	5	1	4,278
Hard maple	17	15	5	76	24	0	0	1	2,111
Bur oak	14	35	9	100	0	0	0	1	7,773
Sycamore	13	5	3	85	15	0	0	1	804
Pines	11	25	10	64	36	0	0	1	6,139
Miscellaneous[6]	60							4	13,564
	1,632								$494,012

[1] GOOD: Healthy vigorous tree. No apparent signs of insect, disease or mechanical injury. Little or no corrective work required. Form representative of species.
[2] FAIR: Average condition and vigor for area. May be in need of some corrective pruning or repair. May lack desirable form characteristic of species. May show minor insect injury, disease or physiological problem.
[3] POOR: General state of decline. May show severe mechanical, insect or disease damage, but death not imminent. May require major repair or renovation.
[4] DEAD OR DYING: Dead, or death imminent from Dutch elm disease or other causes.
[5] Tree value calculations modified after current International Shade Tree Conference recommendations.
[6] Paper mulberry, Red oak, Black locust, Honeylocust, Hybrid elm, Kentucky coffeetree, Tree of Heaven, Sweetgum, Weeping willow, Persimmon, Cottonwood, Baldcypress, Silver poplar, Tulip poplar, Ginkgo, Boxelder.

pointed by the Mayor or other appropriate official. The board is charged with responsibility to develop and administer a comprehensive community tree program. Selection of the board members is important to the effectiveness of the board. Ideally, the City Tree Board is composed of three to six informed, concerned and respected citizens. For example, individual members might be a city employee concerned with city maintenance, an arborist, the head of a civic service group, or a prominent business man.

CITY TREE ORDINANCE

Next, essential legislation should be enacted to give the City Tree Board authority to carry out a program. Codification used to provide authority for a street tree program is usually in the form of an Ordinance (as adopted in Kansas from Neely and Himelick[18], which establishes the responsibility for street tree installation and maintenance.

The City Tree Ordinance should include: 1. Definitions of "street trees" and "park trees". 2. Creation and establishment of a City Tree Board. 3. Term of office. 4. Compensation. 5. Duties and responsibilities. 6. Operation. 7. Street tree species to be planted. 8. Spacing and distances from curbs, etc. 9. Trimming; corner clearance. 10. Dead or diseased tree removal on private property. 11. Authority of City Tree Board. 12. Arborists license and bond. 13. Review by City Commission. 14. Penalties for violation. 15. Repeal of conflicting ordinances and severance clause.

Kansas statutes[13] grant to any Kansas municipality the authority to enact and enforce such as Ordinance and may serve as documentary guides for composing a valid code with adequate coverage to anticipate contingencies. It is important to study the local situation in depth and write the ordinance to accommodate immediate and future municipal objectives.

The enforcement of the local Tree Ordinance will be practicable only if[9]: 1. The ordinance has the overwhelming support of the citizens of the community. 2. The ordinance was enacted as the result of an expressed desire of a majority of the citizens of the jurisdiction for a well ordered and maintained street tree program. 3. The ordinance provides some flexibility as to the species of street trees to be planted. 4. The ordinance grants authority to the enforcement equal to the responsibility placed on him to carry out the ordinance. 5. The ordinance protects the

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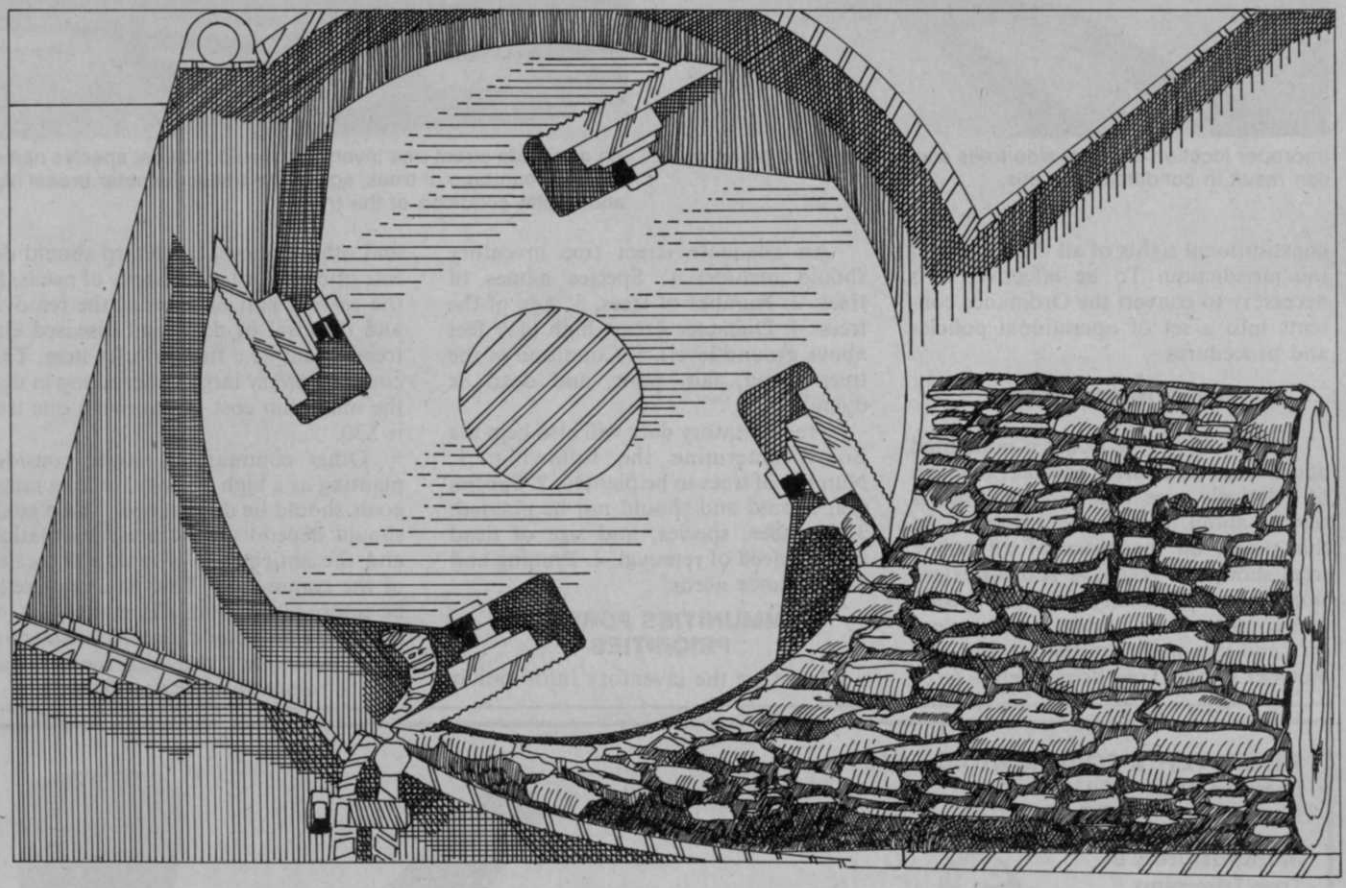
There's a neat angle to our new chipper story.



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Improper location of street-side trees and short sighted planning can result in conditions like this.

An adequate street tree inventory should include: species names of trees, numbers of trees, age of the trees, diameter breast high and health condition of the trees.

constitutional rights of all the citizens of the jurisdiction. To be effective, it is necessary to convert the Ordinance contents into a set of operational policies and procedures.

TREE INVENTORY

After a City Tree Board is appointed and a Tree Ordinance enacted, one can be relatively sure that a community is serious about a street tree program. At this point, an inventory of all public trees should be taken. A Kansas extension forester familiar with tree species and conditions will assist in this inventory and it is suggested that at least one member of the Tree Board help.

An adequate street tree inventory should include: 1. Species names of trees. 2. Number of trees. 3. Age of the trees. 4. Diameter breast high (4½ feet above ground level). 5. Condition of the trees (good, fair, poor, and dead or dying).

Tree inventory data will also help the Board determine the following: 1. Number of trees to be planted. 2. Species that should and should not be planted. 3. Number, species, and size of dead trees in need of removal. 4. Pruning and maintenance needs.

COMMUNITIES FORESTRY PRIORITIES

Based on the inventory information and other factors, the board should define priorities, or a hierarchy of needs. In the eastern half of Kansas, the removal and disposal of dead and diseased elm trees would be a first priority item. This could be a very large undertaking in that the minimum cost of removing one tree is $30.

Other communities might consider planting as a high priority, so long range goals should be determined. These goals should depend on the present situation and the anticipated growth and wealth of the community. This planning could be approached from the standpoint of "If the community's tree environment is to be adequately provided for, then so

(continued on page 65)

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Government News / Business

Watch where you store paraquat. The Environmental Protection Agency is cautioning herbicide users to pay special attention to the label precautions on weed killers containing the compound paraquat. The EPA warning came in light of several reported poisonings, apparently involving accidental ingestion of the chemical. In Hawaii, one of the poisonings allegedly resulted in the death of a teenage boy. In California, another teenage boy is currently hospitalized in critical condition, the cause tentatively listed as paraquat. Both incidents apparently resulted from the boys drinking the paraquat herbicide from unmarked beverage containers.

Forecasts call for continued belt-tightening, around our gas tanks that is. Standard Oil Company prognosticators are predicting that, for some time to come, fuel conservation is going to be essential for the United States and the entire world. In '73, one barrel of every three came from foreign sources; dependency of the U. S. on foreign crude and refined products could rise to the 50 percent level by the early 80's, even with continued conservation, officials say. Standard has scheduled about $954 million for exploration and development this year. Some 70 per cent is slated for the U. S. and Canada.

EPA plans effluent standards for nine poisonous substances by June. These will be the first federal limits on toxic materials in wastewater to apply across-the-board to all industries, municipalities and persons. The nine include four pesticides, aldrin-dieldrin, endrin, DDT and its derivatives, and toxaphene; two heavy metals, cadmium and mercury; two industrial chemicals, benzidine and polychlorinated byphenols (PCBs); and one compound, cyanide.

OSHA reports job safety and health inspections during February, 1974, were nearly double the weekly average a year earlier. The agency conducted an average of 1,695 weekly inspections during February, '74. Weekly average for the same period, '73, was 919. John H. Stender, who heads OSHA, reported 4,722 employer citations; alleging 26,668 violations and proposed penalties of $520,072.

J. J. Mauget Company now serves their customers for tree injection products with a toll-free number at their Burbank, Calif. office. The new number is 800-423-2699.

EPA is sponsoring the first National Symposium on pesticide labeling. Date is June 3rd and 4th, '74. Intention is to open dialogue between federal and state regulatory people, user groups, pesticide producers, university personnel, environmental groups and other interested parties. Speakers from these various disciplines will present current labeling requirements, label problems, improving communications, reader motivations and an assessment on label style. The audience will be given opportunity to air specific problems during a panel discussion period.

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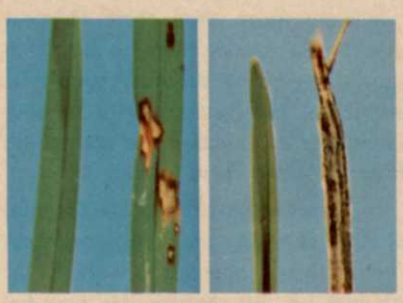

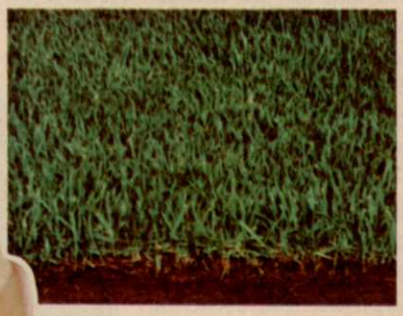

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Getting Acceptable

People who own or manage an ornamental horticultural business or a turfgrass oriented enterprise have the ability to manage more than their physical capacity will permit them to do. This requires the hiring of other people to assist them. These employees must now be managed as to acquire an acceptable job performance from each.

A person who works by and for himself alone is totally production oriented. When he hires someone to work for or with him his job changes. He now becomes concerned with a "people" problem. He must create an environment in which that person, he has hired, can produce at a maximum productivity level.

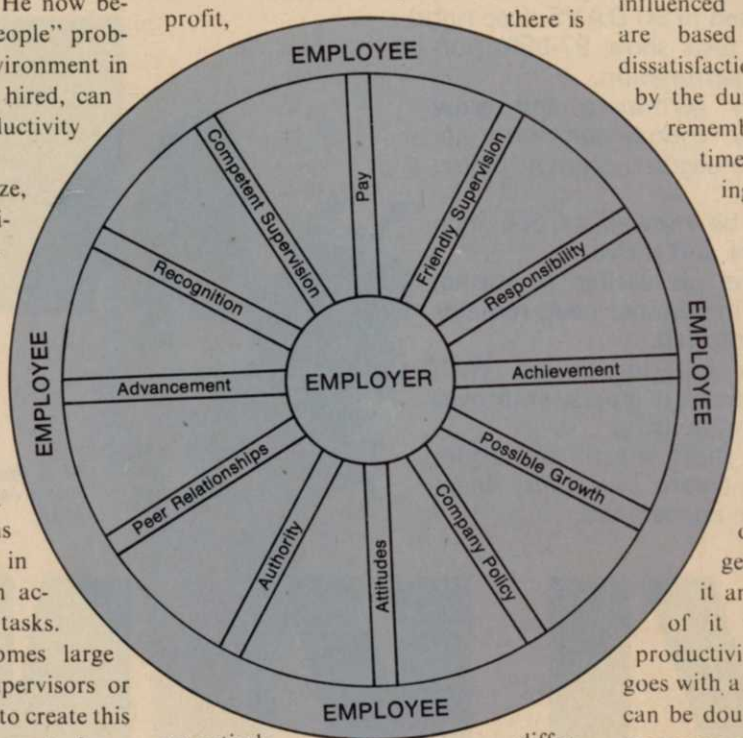
He must plan, organize, execute, control and coordinate time-consuming activities, materials, money and equipment. But, above all, he must create and maintain a high morale on the part of his employees. He must help them keep favorable attitudes towards the organization. He must crystalize elegant opinions in their minds. He must in reality be their assistant in accomplishing their assigned tasks.

When a business becomes large enough to use first-line supervisors or foremen, then it is their job to create this environment. Top management, however, must make it possible for them to do this by extending the same type of treatment to the foreman as they expect the foreman to extend to the employees.

Top management attitudes are extremely contagious. When top management becomes gloomy, envious, or angry it takes only a very short time to detect the same feelings among the rank and file. When morale is the first consideration of management, it becomes evident that ordinary people can be trained to do extraordinary work.

The objectives of an enterprise such as a landscape contractor contribute greatly to the morale of the employees. People just do not want to work for an organization that does not have significant objectives. It is not enough that the objectives exist but they must be known and understood.

When several objectives exist the order of their priority affect the attitudes of the personnel. For instance, if the objectives are (1) make a good product, (2) be a good place to work, (3) be an asset to the community, and (4) make a profit, there is



an entirely different psychological reaction than if they were arranged with profit as number one. In the latter case there is a mercenary attitude displayed by the company and the employees assume that they, too, can be mercenary even toward the company. This attitude is not as likely to be created in the former case, yet the importance of profit has not been affected.

Every managerial decision regardless or how small or insignificant has a behavioral consequence on the workers. To change seed suppliers can affect the behavior of the people. Rumors and speculation of why this change was made can become paramount on the grapevine. Such reaction can often be averted if relevant information is plugged into the grapevine, before the decision is made.

Behavior is what personnel management is all about. The employee is constantly evaluating management by saying to himself: "Unless you can somehow affect my ability to satisfy my needs, you will not influence my behavior." Behavior is to a large degree influenced by attitudes. Attitudes are based upon satisfactions and dissatisfactions. These are measured by the duration of the time they are remembered and the frequency or times they are referred to during this duration.

Pay is a factor that is always involved in the work experience. It is essential and necessary but it is not a motivator. Pay, if anything, is a dissatisfier. If a person gets a raise he remembers it a very short time and talks very little about it. On the other hand, if he does not get the raise, he remembers it an awful long time and talks of it very frequently. Increased productivity very seldom, if ever, goes with a pay increase. A person's pay can be doubled and he still will not do any more work.

A motivator that excites people to want to come to work tomorrow and to try to accomplish more must be something that they can use on the job. Pay cannot be used on the job. It generally is never as much as the person wants. It must, however, be a going wage and one that satisfies the person's needs.

High pay generally creates great satisfaction on the part of the worker by permitting him to fulfill needs that he had never dreamed possible. Unfortunately, extermely happy and highly satisfied workers are not always the most productive. Strongly dissatisfied workers can be and generally are highly

Job Performance From Your Employees

By WALLACE A. MITCHELTREE, Extension Specialist, Cook College

non-productive or even disruptive. It is, therefore, more important to concentrate on removal of dissatisfactions rather than trying to supply satisfactions particularly, those satisfactions that do not have lasting qualities or those that might lead to even greater demands and greater dissatisfactions.

Competent Supervision is something that people do not seemingly appreciate as much as they should. They do not remember it long and seldom speak about it, but they sure remember and talk a lot about incompetent supervision.

Supervision is having people do what we want done, when we want it done, the way we want it done and having them want to do it for us. Until they want to do it for us it will not be done. It is a form of leadership and leadership is the act of influencing people to want to cooperate towards goals that are mutually acceptable. Influence, want and cooperate are all essential.

The power or control that a supervisor has over his people is informal — it stems from the people themselves. When the subordinate has a good opinion of his supervisor and holds him in high esteem, he will permit him to have a great deal of control over him. When he has a poor opinion of him and holds him in low esteem, he will give him little or no control over him. When the subordinate has a good opinion of his supervisor he also wants his supervisor to have a good opinion of him.

A person, in order to follow a leader, must have the tools to do the job, the skill to do the job, but most important the willingness to want to do the job. If the tools are lacking, expediency can often be employed. If skill is lacking rapid learning can frequently be effected, but when willingness is absent there is no hope. The degree of willingness is completely a function of supervision and management.

Authority is involved at this point. Authority is always sanctioned towards a more powerful person. If the subordinate does not in his own mind conceive of the supervisor as being more powerful than he, then he will not permit that person to validate authority over him. To be an owner or manager permits a person the right to exercise authority, but it is the people under him who will decide if they are to accept the authority.

Authority can be validated by four different manners. (1) By position — I am the boss — I am the owner. A very weak method. One slight mistake in speech, attitude, or behavior will break this invisible line of power. (2) By technical expertise — when that person wants to learn all he can from the supervisor so that he is as competent as the supervisor. A good way — mistakes can be made that will be overlooked. (3) By rapport. Sympathetic and harmonious working relationships. Many people demand harmonious circumstances and a supportive atmosphere. this is an excellent way. (4) The learning process. This is when the subordinate learns that acceptance of the supervisor's decisions reduces his anxieties and that the judgment of the supervisor is more sound than his own. A very effective way, particularly with younger people. All of which take time to establish. The supervisor cannot buy or demand but must earn his position of authority.

Employees insist upon a supportive atmosphere, a condition whereby some one will listen to them and help them with their problems — personal as well as otherwise. If a young man starts to work for the first time, he often is making more money than he ever saw before. He goes out and gets married, buys a new car, new furniture and rents an apartment. Suddenly he realizes that he cannot stretch his paycheck to meet all his bills — he's in trouble.

He asks for help from his boss. He wants him to listen to him and help him. The boss can say "You got yourself in trouble get yourself out." The young man immediately formulates an unfavorable attitude — low morale and little appreciation for the boss.

The boss could pay off the boy's indebtedness — the worst thing he could do. The boy would expect others to always bail him out of trouble.

The boss could go to the credit agencies and through his influence arrange for extended payments which the young man could handle. The boss now becomes a powerful person — authority and control are granted him; the boy's morale is good . . . he wants to come back to work . . . wants to accomplish and produce.

This all took time on the part of the supervisor. Managers should always realize that personnel problems can never be handled in small chunks of time. It does not take long to fire a man but this is not solving the problem because when a person is fired the supervisor is only trading one set of bad habits for another.

To find the time he needs is a manager's biggest problem. It is one place we are all endowed equally — everybody has the same amount of time — some seem to use it better than others. Another thing about time. It is irretrievable — once it's gone it's gone, never to return. It helps if the manager logs his time to see where he is using it. He is generally surprised at how many things he has done and the amount of

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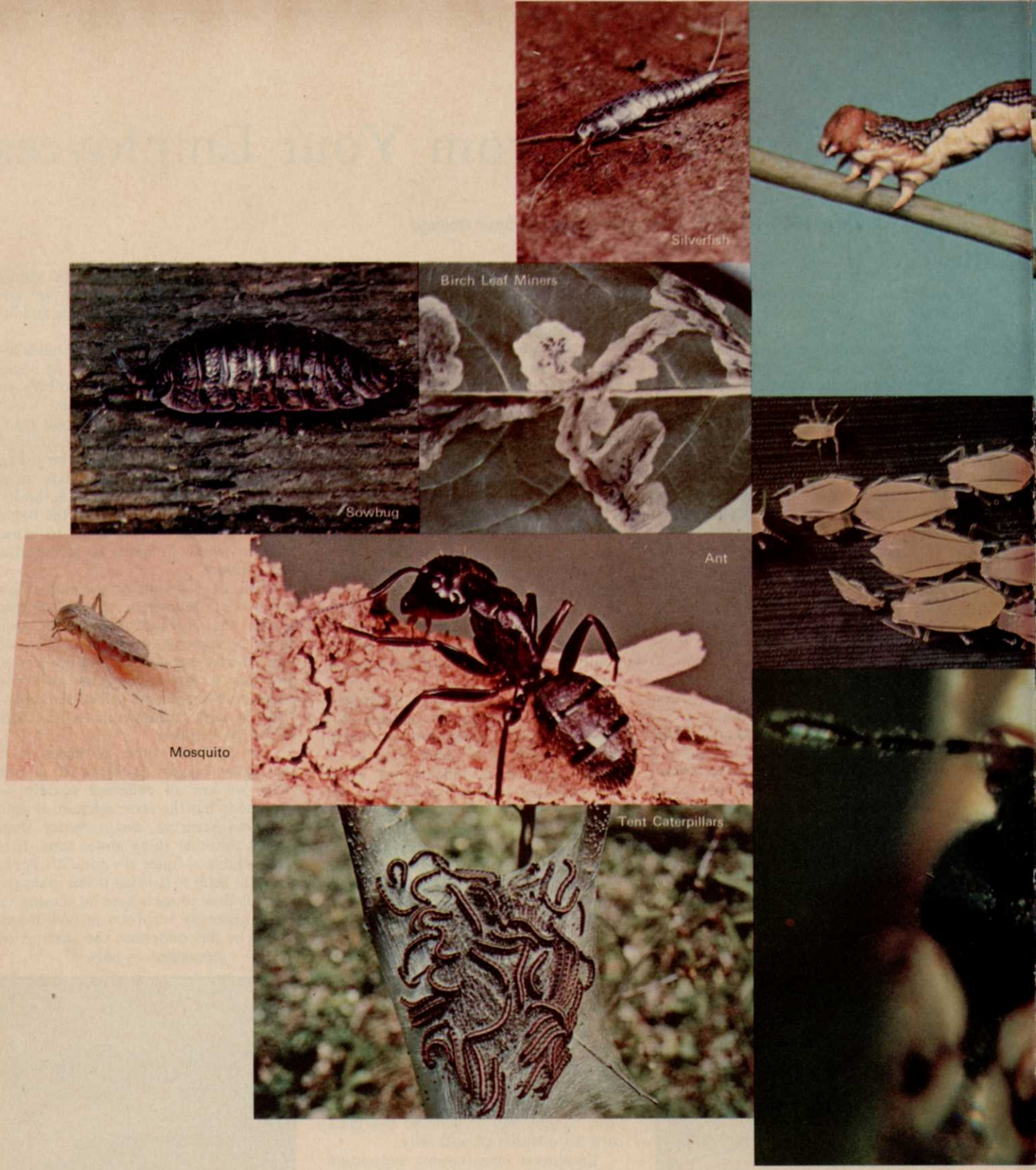
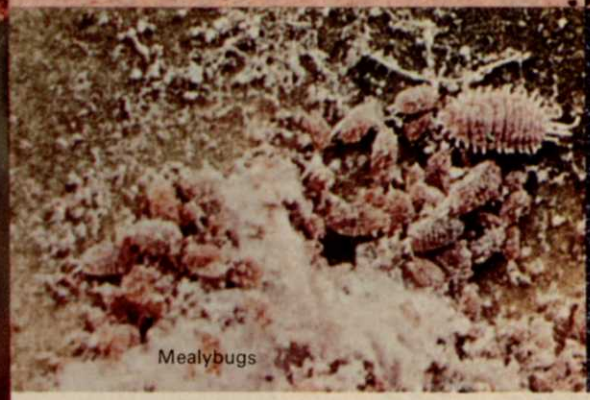


1974 will be a bad year for bugs.

Bad for bugs of turf and ornamental plants. And bad for household and structural bugs. Because Dow has a pair of insecticides that will make their lives miserable. There's ZECTRAN* insecticide, a general use biodegradable insect killer that works on almost all major foliage-feeding insect pests—even the hard-to-kill kinds. Use ZECTRAN on over 600 different flowers, ground covers, trees, shrubs and turf. And then there's DURSBAN* insecticide. Its effectiveness, economy, non-phytotoxicity and biodegradability make it the choice of professional turf men for golf greens, turf farms, home and



Ag-Organics Department, Midland, Michigan 48640

industrial lawns—or wherever grass and ornamentals are grown. It's especially effective to control the hairy chinch bug and sod webworm. DURSBAN insecticide is also preferred by PCO's for controlling household and structural pests—especially resistant roaches that laugh at other sprays. Please remember to read and observe all precautions on the product label. Bugs, get ready for 1974!

*Trademark of The Dow Chemical Company

DOW CHEMICAL U.S.A.

For More Details Circle (110) on Reply Card

Major participants in the recent ninth annual Maryland Sod Conference at the University of Maryland campus were: Dr. William H. Mitchell, extension agronomist at the University of Delaware; G. Laurence Moore, Florence, Md., president of the Maryland Turfgrass Association, Inc.; Dr. James Miller, agronomy department chairman at the University of Maryland, and Jack L. Kidwell, Culpeper, Va., national president of the American Sod Producers Association.

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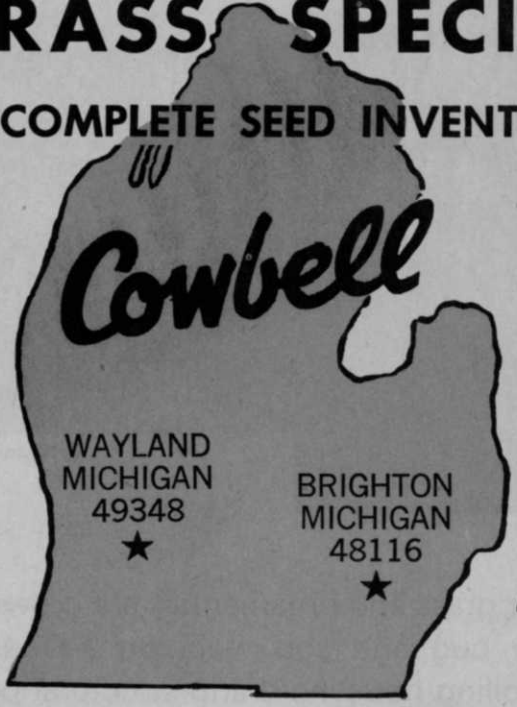

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Special Mixes for your particular need

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For More Details on Following Page Circle (103) on Reply Card

For More Details Circle (162) on Reply Card

Aerial applicators: want to take off with this kind of drift control?

You can. Just use Lo-Drift™ spray additive the next time you fly on an Amchem herbicide.

What you see here ground-applied is what you'll get airborne—a major reduction of fines that can cause drift problems. Instead, the spray is made up of large, heavy droplets that fall faster, stay intact, and land where you want them. And stick better, too. Because Lo-Drift not only increases droplet size, it helps them to adhere to foliage.

Lo-Drift mixes readily and requires no special nozzles or mixing/spraying equipment. It won't corrode equipment, and clean-up is simple using just water.

Chemical cost? As little as a penny a gallon of mix. Is there a more economical way to help prevent drift problems from shooting you down? Ask your dealer for a Lo-Drift pamphlet. Or write: Marketing Manager, Industrial Products, Amchem Products, Inc., Ambler, Pennsylvania 19002.

LO·DRIFT™

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A·RORER·AMCHEM COMPANY

AMCHEM PRODUCTS, INC., AMBLER, PA

This is New! Low-Cost Drift

NALCO-TROL™

DRIFT CONTROL ADDITIVE

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- Works with herbicides
- Easy to use—no special nozzles required
- Can be applied with standard available ground or aerial equipment
- Costs just pennies per acre
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Control That Really Works!

Now you can cut the cost of spray drift losses and keep herbicide sprays out of non-target areas. NALCO-TROL added to a herbicide spray solution lets you put a full dose on the precise area needing it, where it will do the most good—not on surrounding areas. Helps you do a better job of spraying.

NALCO-TROL helps you spray more days of the year; whether used with ground or aerial equipment, NALCO-TROL allows the applicator a greater variety of conditions under which he can spray.

NALCO-TROL mixes readily with all water-based, wettable powder and emulsifiable herbicides. So don't let your sprays get carried away. Whenever you spray . . . whatever you spray . . . let NALCO-TROL help you do a better job!

For full information and the name of your nearest NALCO-TROL distributor, write Dept. WT-10.

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Drift Control Additive
to be used with water-based and emulsifiable pesticide spray solutions.
ONE GALLON OF NALCO-TROL IS ADEQUATE TO TREAT 1000 GALLONS OF SPRAY SOLUTION.
CAUTION:
KEEP OUT OF REACH OF CHILDREN.
ONE U.S. GALLON
ACTIVE INGREDIENT: POLYVINYL POLYMER 30%
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Fence Lines

Without NALCO-TROL . . . spray drifts

For fixed wing and helicopter spray application, too

You Want It

NALCO Trademarks of Nalco Chemical Company

Job Performance

(from page 35)

time that he has spent on each item. He should go down the log and ask himself "What would have happened if I had not done this?' If the answer is "Nothing," he should never do it again since it is a time waster. It always helps to have a list each day of things that have to be done in the order of their priority. It is surprising how much more can be accomplished with a little planning.

Friendly Supervision is another thing. It means little to men. They prefer it but do not demand it. Women on the other hand insist on it. They remember friendly supervision a long time and speak frequently about it, and they become highly dissatisfied if they are handled crudely or rudely.

Company Policy is an item that is seldom understood and where attitudes get deeply involved. People do not remember it or speak too often about it when it is good, but they sure remember and talk when it is not to their liking. Company policy is that indefinable area of sagacity in the conduct of company affairs that undoubtedly affects the formulation of attitudes.

Attitudes are positions we assume for a purpose. They are frequently preconceived viewpoints. They often evolve from past experiences, or hearsay. They are a readiness to react to a particular person or situation in an impulsive manner.They can range in intensity from a mild viewpoint to a deep conviction to a prejudice. They insulate a person from others' viewpoints because they cannot accept the other person's facts or even hear what they are saying.

When we are dealing with mild viewpoints we can use facts but deep convictions and prejuduces are emotional and facts do not stand a chance. People can interpret a certain act or situation as favorable in the case of one person and unfavorably in the case of another.

Attitudes that are deep convictions or prejudices can be changed in a person only by some other person for whom they have a great deal of respect. If the person for whom they have the respect states his position, the other will weigh his comments often deciding that if this person holds such a viewpoint, then he, himself, must be wrong, and decide to accept his points as valid. A great deal of thought should be put into formulation of company policies and how they will be accepted by the personnel.

In this respect it is highly important that management be resrespected by the rank and file by doing everything else as near right as possible so that cooperative attitudes will be formulated and compatible opinions be crystalized.

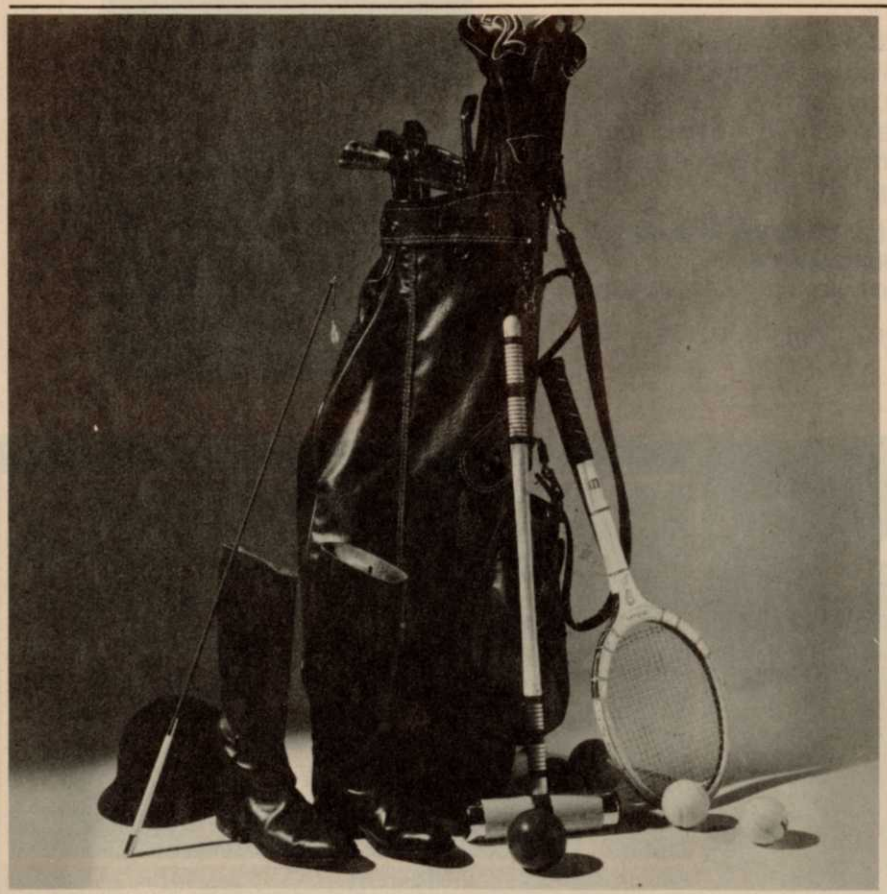
Possible Growth is often an essential ingredient in successful management. Many people as they come to work for an organization have the hopes of improving their personal worth and status and want the opportunity to grow and help the company grow. This can be a driving force which can be in their minds at all times and something they talk about very often. If the opportunity is not present they generally leave the organization rather than fight it.

It is not always bad when people leave an organization. People who are not getting what they want from a work environment and are dissatisfied will often leave to try and find work that will "turn them on" so to speak. It is the people who become dissatisfied and "turned off" but will not leave, because of family or community ties or because they do not want to give up their vested perquisites or are afraid to look for another job, that develop incompatible attitudes that cause them to produce poorly and generally cause trouble.

Peer Relationships is something that bothers men less than women, particularly in the hourly pay brackets. Men would rather not have some one person getting treated better than they, but it's no big deal one way or the other.

In the case of women, however, — watch it. It means a great deal to them.

(continued on page 46)



For turf. Any turf.

3-D Weedone.

A special blend of three herbicides in one that turns a fairway or a front lawn into beautiful, weed-free turf.

It's powerful. It contains 2,4-D, the standard, time-tested broadleaf herbicide that controls most common turf weeds. Plus Dicamba, to broaden its control to more than 100 species of weeds and woody plants.

It's fast. Silvex speeds up the whole weed-control process and gives you added, effective control over chickweed, clovers, and other tough weeds.

It's professional. Yet you don't have to be a pro to use it. Just mix with water, spray, and watch the weeds disappear.

Use 3-D Weedone. For great results on turf. Any turf.

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We're more than middle-of-the-road.

The best automatic sprinkler systems... for the least problems.

Whether you're irrigating a median strip or a National Park, TORO can meet your specifications. And then some.

OUT OF SIGHT, OUT OF MIND TORO heads pop up higher than most . . . then pop down below ground surface to prevent vandalism and accidental damage. Nozzles are mounted on a stainless steel spring so there's never a hang-up.

NO WASTE, NO WORRY Our Stream Rotor head's low precipitation rate stops run-off, even on steep road banks. But that solves just one of your problems. TORO offers 586 different head variations to handle the others. Right now, we're developing a 12″ pop-up to rise above high ground cover problems.

The Monitor II controller, available in 11-station and 23-station models, is protected by lock-up, steel wall- or pedestal-mount cabinets.

THE STRONG, SILENT TYPE TORO heads are made of tough, indestructible Marbon CYCOLAC.® Self-contained gear assemblies of DuPont DELRIN are sealed in oil for less wear and tear and the nozzle is protected by a basket filter. TORO heads operate silently. So with one setting on a central controller dial, you can program a TORO system to go on automatically long after your maintenance crew's gone home.

AT YOUR SERVICE TORO's nationwide network of distributors and contractor/installers is available whenever, wherever you need them . . . with no two or three week delays. And they're backed by 50 years' experience in the turf care business. So next time you're looking for the most system for your money, be specific. Specify TORO. For details, write TORO Irrigation Division, Dept. W-574, P.O. Box 489, Riverside, CA 92502.

For More Details Circle (142) on Reply Card

Green Industry Newsmakers

'Artful Dodger'

Diamond Shamrock finally found an outlet for all that hot air. The *Artful Dodger,*. named for Charles Dickens infamous bamboozler, is a 75,000 cu. ft. four passenger balloon. It is used for promotional and charity activities and to give company guests a unique experience. The balloon is based at the company's Nopco Chemical Division plant in Morristown, N.J.

N.Y. State Arborists

Treeeeees! said the newly elected New York State Arborists officers when they lined up to have this beauty snapped. The association voted for officers at their annual meeting in January. Pictured from left to right: **D. W. Cadwallader, Ms. Margaret Herbst, James W. Taylor Jr., Jacob Bruinooge, Sam Blakley,** newly elected president **Carl Lundborg,** out-going president **Jack Schultz, George Callaway, Richard Wickey and Leo Cook.** Not pictured are **Philip J. Brogan, David E. Williams, David K. Kress and Edward Johnson.**

F. Manley Corp.

F. Manley Corp., Ontario, Canada, has been named distributor for the Bolens line of lawn and garden equipment by the Outdoor Power Equipment Div. of FMC Corp. Manley, a long established distributor of lawn and garden products, recreational vehicles and industrial equipment, has been serving dealers throughout eastern Canada since 1945.

Disneyland golf pro **Bernice Kramer** tries out the Emerald bentgrass putting lane at the GCSSA show in Anaheim, Calif. Admiring her stroke is **Jack Hertwig** of Germain's Inc., and **Gaylord Gary** of the Rudy-Patrick Co., sponsors of the live-turf putting contest. Ms. Kramer sank five consecutive 17 foot putts.

Emerald Bentgrass

"At first look 20,000 seems a mere handful,"said Bombardier president **Laurent Beaudoin.** "But considering these industrial vehicles are unique, custom-built units ranging in price from $7,000 to $55,000, engineered for difficult off-road tasks, 20,000 becomes significant." Canadian manufacturer, Bombardier Limited, lined up an assortment of their logging vehicles, snowplows, materials and personnel carriers to celebrate this significant milestone.

Bombardier Ltd.

Agrico 18-4-10 Works More Efficiently. And We'll Go To Any Links To Prove It!

It's a fact. Agrico Country Club Fertilizer for tees and greens provides more efficient feeding. It gets down to the grass roots quicker, and gives you more feeding power for your money.

We'll prove it to you on your own course, free of charge.

While other fertilizers are still at the surface level—where they can be mowed away by greens mowers—Agrico's 18-4-10 formula is already rapidly penetrating to the root zone. The key to its rapid penetration is Agrico's scientifically sized, extremely dense particles. These tiny, non-burning granules are quickly dissolved and absorbed to provide instant, longer lasting feeding power. With far less pick-up by mowers.

Proven on leading golf courses, Agrico's 18-4-10 contains the balanced nutrient formula necessary for controlled sustenance of high-quality turf. Ten units of water insoluble nitrogen provide the balanced ratio necessary for continued, long-term feeding. Quickly available sources of nitrogen cause immediate green-up.

Sulphate of potash increases summer durability and winter hardiness, while reducing disease incidence. And Agrico's low phosphorus content avoids excessive build-up while promoting vigorous, deep root formation.

"We'll Go To Any Links"

To prove that Agrico works more efficiently, we'll go to any links. Complete the coupon below, and we'll come to you with a free product demonstration. We'll prove beyond a doubt the effectiveness of Agrico's 18-4-10 formula for tees and greens. And we'll fill you in on Agrico's full line of dependable course-care products.

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Please contact me for a free product demonstration of 18-4-10 and for information on Agrico's other course-care products.

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Title _____ Golf Course _____

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Phone Number _____

City _____ State _____ Zip _____

Offer good only in Agrico trade areas.

Job Performance

(from page 42)

If one woman is being treated better than the rest, there is going to be a great deal of dissatisfaction resulting in problems and reduced productivity.

Achievement or rather the measure of achievement is one of the prime motivating forces that can be used with people. Everyone likes to accomplish something and they like to know how much they have accomplished. It is something they do not remember for ever but while they do remember it, they talk a great deal about it. Records are to be broken and people are competitive and a measure of achievement causes them to want to come back to work tomorrow and see how much better they can do.

People often talk about the increased productivity with incentive pays such as piece work, and give all the credit to the opportunity of increased earning capacity. This is true to a certain extent but also inherent in all incentive pay schemes is a measure of activity. When this measure of activity is introduced into a simple hourly pay program, increased productivity is also experienced.

Recognition is a must in acquiring acceptable job performance. It is not something that people remember a long time but they like it when it is earned and they talk and brag about it to their families and friends. It must, however, be genuine and not presumed to be flattery. The persons involved know when they have done a good job — management knows it also. Therefore, it must be given when earned and publicly, if possible. Supervisors should always remember to praise the person and criticize the job. The recipient of a properly given citation for earned recognition is always anxious to return to work and to compete for another such honor.

Advancement is a driving force. The goal of many people is for constant and consistent advancement. This is probably more true of people in the management hierarchy but also of many people who want to advance into management. People who advance as far as possible in one enterprise may leave to join another where higher positions are possible but while with the original organization have produced well and above the expected level just to reach the goal that they have coveted.

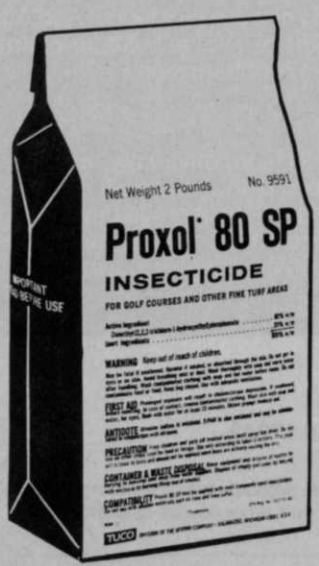
Advancement is remembered long and often but it should never be promised where or when the opportunity is not available because this can cause considerable acrimony, dissatisfaction, and problems. Management's aim in decision-making should be to reduce problems not increase them.

Responsibility when taken in its broadest sense is the epitome of motivation. Responsibility not for other people necessarily but for knowing how and being permitted to do a job well in one's own manner. People do not mind being told what to do but they want to decide how to do it themselves. They are proud of their skills and want to practice them. When people are given the opportunity of accomplishing a task by their own self-direction and self-control, they are enjoying their maximum motivation.

This is the reason that people generally work harder for themselves off the job than while on the job. People have a great deal of imagination, ingenuity and creativity that they like to use and enjoy the results. Responsibility is something that people remember a long time and talk a great deal about.

An interesting thing about the factors discussed here, all, except pay, are things that can be used on the job; all of them have more influence on productivity than pay; they are all, if not equally important, at least highly important; they complement each other, and none of them costs the company any real outlay of finances. By using these factors with an eye towards reducing or removing employment dissatisfactions, a manager can come closer to obtaining maximum productivity or acceptable job performance. □

Take the guesswork out of turf insect control



Diagnostic Aid from TUCO

Many turf insect larvae are night feeders, so the first evidence of their activity frequently is damaged turf. Diagnostic Aid, applied to turf as directed, causes insects to emerge to the surface within 10 minutes. They can be identified and counted to determine the level of infestation and whether an insecticide should be applied. It also can be used after insecticide application to measure the control obtained.

Proxol* 80 SP Insecticide from TUCO

Proxol is the one insecticide developed especially for use on fine turf and ornamentals. Sod webworms and cutworms are two major groups of turf insects controlled by Proxol. It is estimated that each sod webworm larva can chew up 20 square inches of turf in its average life span of 20 to 40 days; the cutworm larva can devour up to 36 square inches. With 300 to 500 larvae generated from each adult in a period of 10 to 21 days, it becomes apparent why early detection and control are desirable. Using Diagnostic Aid and Proxol together lets you program insect control.

*Trademark

One bottle of Diagnostic Aid FREE in each case of Proxol 80 SP.

BEFORE USING ANY PESTICIDE STOP READ THE LABEL

TUCO Division of The Upjohn Company, Kalamazoo, Michigan 49001

For More Details on Preceding Page Circle (104) on Reply Card

Occupational Noise Update

The Sweet Sound of Industry

The sound of industry has been sweet to hear! At least, to the man who owns the business, or maybe the Chamber of Commerce.

But, for a long time the sweet sound has been getting a bit loud. In fact, sometime it's downright noisy. Happily, since the middle of 1971 things are supposed to be getting quieter. Or, haven't you heard (no pun intended)?

July, 1971 is when the Occupational Safety and Health Act became law and, because of it, **you** may be one of the many people who's supposed to be making the change.

Find out. If you are, and don't, there are severe penalties involved and your operations could ultimately be shut down!

Start by knowing what OSHA has to say on the subject. That's contained in Section 1910.95, which is printed adjacent to this article for your convenience.

First, you need to know something about sound. The experts say that certain sound pressure levels above 90 decibles (dB) **may** be injurious to the hearing of some people. We aren't all affected alike by these things, so just to play it safe the "threshold" level of 90 dB was agreed upon. Even now, some people think it should be lowered to 85.

Be that as it may, whether or not any particular sound level will be injurious to any given person depends on how long he's exposed to it. So, included in the regulations is Table G-16. This gives the time of exposure to various sound levels allowed in one day. For example, by OSHA laws a sound level of 92 dB can be safely tolerated for up to six hours a day, while a sound level of 110 dB is permitted for only 15 minutes.

Your first reaction to this might be, "Well, if I have a problem with a sound level of 110 dB, all I have to do is cut it in half, and wind up with 50 dB. That would put me home free, right?" Wrong! Because decibels don't add and subtract the way other things do.

Sound level is measured on a scale based on ratios and logarithms. When you cut a sound pressure level in half it goes down by only six decibels. If you double it, it goes up by only six. (In case you're wondering, when two equal sound sources are put together, the net increase in sound pressure level is only three dB.) Seems very funny. But that's the way it is. Obviously, the problem of controlling sound is somewhat tougher than it first seems to be.

Sound frequency is important too, but all we have to know about it here is how it's taken care of when a sound level is measured. If you're interested, the sound level meter has three scales — A, B and C. Mostly, the difference between them is the way they discriminate against the very low frequencies, with the greatest discrimination being in the "A" scale. For each of these settings the meter can be set on either "slow" or "fast" response.

At fast response the meter needle will try to follow every change in sound level, which would make it hard to read. Set at slow response, there is much less needle movement, making the whole thing easier to read. So, any sound level measurements you use for compliance purposes must be made with a meter set on the "A" scale, slow response.

Note the column heading on the right in Table G-16. It reads, "dBA slow response". That means that the sound levels listed are as measured on the "A" scale of a sound level meter set at slow response.

Are you in compliance? If you don't know, find out. Chain saws, chippers, brush saws and, in fact, most equip-

(continued on page 56)

Certified Manhattan

Turf Type PERENNIAL RYEGRASS

Manhattan perennial ryegrass was selected and developed by Dr. C. Reed Funk, Rutgers University. Manhattan develops a uniform dark green, leafy, dense turf with leaf blades finer than most Kentucky bluegrasses. Excellent for hard use areas such as tees, green aprons, cart path flare areas and hard use problem areas. Mowability ratings are excellent.

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Manhattan's fine texture is illustrated in this comparison.
Left: FINE LEAF FESCUE
Center: MANHATTAN PERENNIAL RYEGRASS
Right: KENTUCKY BLUE GRASS

Manhattan blends well with other grasses. Here it is combined with Bluegrass.

It's Kid Proof!

Manhattan is outstanding for hard use areas. Cartpath flare area reseeded with Manhattan perennial ryegrass.

When The Going Gets Tough—

By JOHN R. HALL
Turf Specialist

In this peculiar time when we find our ability to obtain the material necessary for the production of quality turfgrass hampered by shortages, it becomes increasingly difficult to make management decisions. Today's supply uncertainty looms heavily in the minds of all turfgrass managers. Turfgrass managers are generally paid commensurate with their ability to provide quality turf **in spite of Acts of God or man.** Therefore, I fear we had best tighten up the reins and get with it.

Current material shortages exist in gasoline, fertilizer, seed, chemicals and machinery. The reasons why these shortages exist are complex and in certain instances unexplainable. The fact remains, however, that if "Push Gets to Shove" the turfgrass industry is going to have a struggle on its hands. All segments of the industry are now feeling the pressure of shortages. The American Sod Producers Association (ASPA), Maryland Turfgrass Association, Maryland Turfgrass Council and Mid Atlantic Association of Golf Course Superintendents are actively defending their interests. Others are involved, too.

Largely through the efforts of an alert American Sod Producers Association the sod producers have been granted the status of "agricultural production" by the Federal Energy Office. This means that if fuel is available sod producers will be allotted 100 percent of current requirements. Fuel availability to sod installers is not as clear.

ASPA legal counsel, William A. Harding, indicates that the Federal Energy Office is considering use of the Standard Industrial Classifications Manual Definitions in future cases. In this manual sod is classified as an agricultural commodity and the installation of sod is classified as an agricultural activity. However, it appears that only sod installers involved in sod production will receive agricultural energy allocations.

Fertilizer will be in short supply in 1974. The reasons for the fertilizer shortage are many: 1) Release of government control on production acreage has increased fertilizer usage, 2) reduced electrical power and natural gas availability has limited production, 3) devaluation of the American dollar has made our fertilizer cheap on the world market thus we are competing with foreign markets, 4) fertilizer production capacity was reduced when older plants not able to meet new pollution and safety standards were shut down in lieu of costly modifications, 5) more urea is being used as a protein feed supplement because of high protein food costs.

Our fertilizer prices are higher due to: 1) increased costs of natural gas, phosphoric acid, sulphuric acid and basic nutrients used in production, 2) increased labor and transportation costs, 3) increased production costs as a result of expensive pollution abatement equipment and 4) increased cost of fertilizer bags.

Turfgrass managers with properly timed cool-season grass fertilization programs should miss the real fertilization crunch that will arise when corn and soybean fertilizer meets peak. No sod producer in Maryland should have applied spring nitrogen fertilizer to cool season grasses after March 31. The longer after this date one waits to apply his nitrogen fertilizer the more shoot growth and less root growth he is going to produce. More shoot growth simply means more mowing and further aggravation of your gasoline shortage problem.

Seed prices are up and availability of certain bluegrass varieties is mixed. The current seed shortage arises as a result of several factors: 1) competition with wheat land is severe and certainly of a good price for wheat is better than for grass seed, 2) open burning of seed fields has been prohibited reducing seed yields and increasing disease and insect problems, 3) drought in the 1972-73 production year was the worst in 50 years and crippled seed production and 4) overseas markets are booming with European and Japanese countries now becoming turfgrass conscious. The current seed-pricing situation has brought the common Kentucky bluegrass almost into the same cost bracket as the superior varieties. With the cost differential diminishing between superior bluegrass and common bluegrass this should be the year to strengthen the blends with real performers such as Merion, Penn-star, Fylking and Adelphi.

Chemical availability also appears to be mixed with most of the standard broadleaf weed control materials such as 2,4-D, Silvex, Dicamba and MCPP in short supply. Prices are up somewhat due to the fact that most of our pesticide chemicals are petroleum-based and oil is deficient and expensive.

From a management standpoint, the use of surfactants should allow more efficient use of herbicide materials and help reduce rates of use. Consider use of synergistic mixes of demethylamine salts of 2,4-D, MCPP and Dicamba. Total herbicide usage can be considerably reduced with the synergistic mixtures.

Keen diagnostic techniques are essential in this time of shortages. Preventive spray programs will become harder and harder to justify as the season progresses. Blanket applications of insecticides and fungicides without positive diagnosis is a luxury few of us will be able to afford. Consider use of pyrethrins for diagnosis of sod webworm problems in 1974. This insecticide-irritant will bring thatch-borne webworms to the surface of the turf simplifying diagnosis.

Machinery and parts availability is poor for most of the turf industry. Stocking of parts that annually break down might be wise. There may be considerable delay for some replacement parts. In view of this situation proper machinery maintenance is more essential than ever before. All the turfgrass management expertise in the world is of no avail if equipment is not running.

Admittedly the picture is bleak but we in the turf industry know as well as anyone that when the Going Gets Tough — The Tough Get Going.

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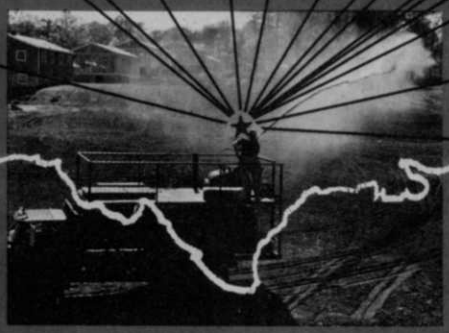

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O.J. Noer Grant-In Aid Presented to MSU

Frank I. Shuman (on left) presents a continuing O. J. Noer Research Foundation, Inc., $4,000.00 grant-in-aid check to Dr. James B. Beard at the Michigan State Turfgrass Conference, East Lansing, Michigan, in mid-January.

Beard heads the turf research work at Michigan State University. Shuman is Secretary-Treasurer for the O. J. Noer Foundation and a Philadelphia area Toro distributor.

In addition to the research at Michigan State, The Noer Foundation supports work in progress at the University of Florida, Pennsylvania State University and Texas A & M University.

Grass Seed Production Continues In Oregon

The rumor is out that Oregon will move out of grass seed production unless a workable field burner is found immediately.

A publicity release from the Oregon Seed Council claimed that such prognostics were simply rumors. The release also suggested that it is extremely remote that the legislature will enforce the January 1975 deadline to halt open field burning.

In Oregon's Willamette River Valley, an area about 3,000 square miles, some 270,000 acres of grass seed is grown each year. Ryegrass, fine fescues, bentgrass and bluegrass plus a considerable acreage of orchardgrass and tall fescues push this cropping practice to an excess of $60 million annually.

The perennial grass crops are kept in stands for about five years and growers of varietal strains must keep fields clean through rouguing out foreign plants and by the use of chemical sprays. The chief source of field sanitation has been burning the straw on the fields, following harvest each year. The heat from the burning straw has proven to be an excellent way to kill seed left in the field following harvest, controlling insects and shocking the plant into greater production. This cultural practice has been

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U.S. Department of Health, Education & Welfare, U.S. Office of Education, Bureau of Education for the Handicapped

in vogue since the 1940's, but is now being buffeted by environmentalists complaining of the smoke in the summer sky.

The 1970 legislature passed a bill calling for an end of open field burning by January 1975, making the summer of 1974 the last season for open field burning. At the same time, the state began a program of matching funds with growers for research into a smoke-free type of mobile burner which would sanitize the fields without the accompanying smoke. The engineering problems associated with constructing such a burner have so far been unsolvable.

The council says a "no burn" ban would cut the crop yields considerably in 1976, but not until then. And they feel the legislature will grant, at least, a two year extension to perfect the burning machines and improve techniques of straw handling and usage.

The high price of wheat may well affect the production of annual grass, but it is doubtful if there will be much change in the acreage of perennial grass crops. Higher prices for annual ryegrass during the past year will encourage production of that crop. Lower prices for annual ryegrass would encourage grain production.

According to the release, if the legislature would be so short sighted and fail to grant an extension to open field burning, crop yields would decimate beginning in 1976. New cultural techniques could be applied to keep grass seed production going, but the change would be expensive to growers and would no doubt be reflected in the cost of grass seed.

Shorter life stands of perennial grasses, burning every other year, and heavy uses of chemicals would be some of the alternatives to field burning. None of the alternatives would be as efficient as the field sanitizing now being used.

Irrigation Specialists Open Office In Westwood

New England golf course superintendents, contractors and architects may benefit from a new move by White Turf Engineering, Inc.

The firm recently opened a sales and distribution center in Westwood Industrial Park, Westwood, Mass. From the new 1,960 square foot location, White hopes to supply a variety of irrigation components to its Eastern Seaboard customers.

Pre-packaged Parts Display For Non-service Toro Dealers

After a successful test in six states, the Toro Co. has extended a new method for merchandising parts and accessories for powered lawn mowers. free-standing displays of parts and

(continued on page 53)

Get a real bargain on a landscape rake.

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The initial cost isn't nearly as important as how much money it's going to save you in the long run. And how many things you can do with it.

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In addition, the Little Rhino has an exclusive offset feature that lets you work close to buildings, fences or any other obstacles.

But the best thing about both rakes is that they can be quickly converted for blade work. The rake frames are the same as we use on our standard blades.

All things considered, a SERVIS landscape rake is as useful and productive as any implement you own.

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So, cut out this coupon, mail it in, and we'll put you in touch with someone who can show you what a real bargain is.

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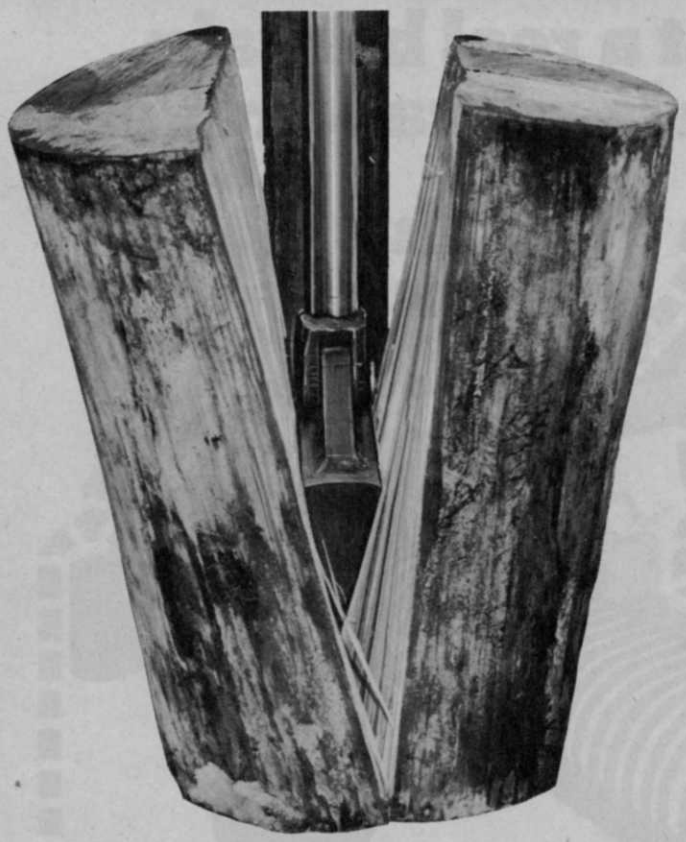

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Put yourself in the firewood business with the LS-200 Log Splitter from Vermeer. It's dependable . . . economical . . . an ideal unit for parks, campgrounds and the outdoor recreation industry. A great money-maker for tree firms, nurseries and rental operators. Hydraulically splits big 30" logs into firewood in seconds. Single control lever activates its powerful, vertical cylinder. Easy to transport from one site to the next. Interested? Write —

meeting dates

Arizona Turfgrass Conference, Sheraton-Pueblo Inn, Tucson, Arizona, May 1 and 2.

California Fertilizer Conference, Anaheim, Calif. May 2 and 3.

Western Chapter, International Shade Tree Conference, annual meeting, Del Monte Hyatt House, Monterey, Calif. May 19-22.

Florida Nurserymen and Growers Association, annual conference, Dutch Inn, Lake Buena Vista, Fla., May 23-25.

American Society of Landscape Architects, 74th annual meeting, Americana Hotel, Bal Harbour, Miami Beach, Fla., June 30-July 4

American Association of Nurserymen, annual convention, Four Seasons-Sheraton Hotel, Toronto, Ont., July 13-17.

Hyancinth Control Society, Inc., Langford Hotel, Winter Park, Fla., July 14-17.

American Sod Producers Association, summer meeting, Sheraton Inn-Northeast, Washington, D.C. (New Carrollton, Md.) July 16-19.

American Society for Horticultural Science, 71st annual meeting, and **Canadian Society for Horticultural Science,** 19th annual meeting, University of Guelph, Ontario, Aug. 11-17.

International Shade Tree Conference, Golden Anniversary meeting, Atlanta, Ga., Aug. 18-23.

National Hardware Show, 29th annual show, New York Coliseum, New York, N.Y., Aug. 25-29.

Professional Grounds Maintenance Society Conference, annual meeting, Crown Center Hotel, Kansas City, Mo., Sept. 4-6.

International Plant Propagators' Society, Western Region, 15th annual meeting, Mission Bay area, San Diego, Calif., Sept. 4-6.

Florida Turf-Grass Association, combined conference and show, Curtis Hixson Convention Center and Riverside Hilton, Tampa, Fla., Sept. 16-19.

International Pesticide Applicators Association, Seattle, Wash., Sept. 18-21.

Southwest Turfgrass Conference, New Mexico State University, Las Cruces, N. Mex., Oct. 10 and 11.

American Horticulture Society Congress, Washington, D.C., Oct. 10-12.

National Institute of Parks and Grounds Maintenance, fourth annual meeting, Pittsburgh Hilton, Pittsburgh, Pa. Oct. 7-10.

Central Plains Turfgrass Conference, K-State Union, Kansas State University, Manhattan, Kan., Oct 23-25.

Oregon Weed Conference, 23rd annual meeting, Indian Hills Motor Inn, Pendleton, Ore., Oct. 23 and 24.

Parts

(from page 51)

accessories in pegboard-mounted blister packages.

Richard J. Hargarten, general manager of Toro's parts division, reported that more than 2,500 dealers have already ordered the "Self-Service Merchandiser" kits.

The initial production calls for packaging 250,000 parts and accessories and the total is expected to exceed a half-million during the year.

The new merchandising concept was tested by 250 dealers last summer and fall. Then the display stand was re-styled and the final selection of parts and accessories for the merchandiser was based on the results of the test.

Hargarten said the self-service merchandiser was designed primarily for non-service dealers, who normally do not stock parts and accessories. Most of these are hardware stores where high-visibility rapid turn-over and built-in service are important inventory requisites.

Each display stand is stocked with a total of 58 packages of 18 different parts and accessories. These include blades, throttle cables, traction control cables, gas caps, battery chargers, mufflers, anti-scalp discs, drive belts for self-propelled machines, and tire kits.

All can be installed simply, without special tools. And each item is packaged with a set of step-by-step instructions, including illustrations.

Each package is identified by descriptive, automotive-style labels, as well as by parts numbers, to facilitate self-service.

The self-service merchandisers will have advantages for consumers as well as dealers. The appearance and high visibility of the display stands will encourage owners of Toro mowers to make minor repairs before they become serious. "They'll save money and avoid the inconvenience of having to wait if a break-down occurs when their service dealer is at his busiest," Hargarten said.

Replacement blades were among the most popular items during the test program.

Florida Turf-Grass Assoc. Changes Meeting Format

The Florida Turf-Grass Association voted to change their meeting format at their annual business meeting recently. For several years there has been two meetings per year - a trade show in the Spring and a management conference in the Fall. Now there will be just one conference and show scheduled for the Fall.

The first combined conference and show is slated for September 16-19, 1974, at Curtis Hixon Convention Center and Riverside Hilton, Tampa, Fla.

Malathion Plus Oil Spray Removes Citrus Sooty Mold

The black sooty-like covering on ornamental plants and citrus frequently confuses the homeowner. This black covering does not in any way seriously injure the plant. Yet, some sunlight may be cut out from penetrating the leaf. The primary cause of black sooty mold is not the one that harms the plants. The black covering can be caused by one of three or four insects — aphids, certain types of scale, and whitefly. At this time of year, aphids are probably the culprit.

The insects named have a sucking mouth part. They feed rapidly and excrete rapidly. Excretment form the bodies of these insects is high in sugar and when dropped on a leaf appears to be sticky. The black covering, which is sooty mold, is present in the air most of the time. It feeds on the sweet excretment of these insects. As it multiplies it forms a layer.

In order to control sooty mold you must control the insect that is excreting the sweet, sticky substance. A spray of Malathion applied according to directions for the ornamental or citrus affected will control the problem. To remove the sooty mold from the leaf, a light application of an oil spray will suffice. Oil should not be used more frequently than at 30 day intervals. Temperature should not range below 45 nor above 85 degrees Fahrenheit.

Plants such as ornamentals and citrus need to be fertilized in order to produce foliage, flowers, and fruit. With the shortage of raw materials necessary to manufacture fertilizer there may be a short supply of the finished material you may want to buy. How can you conserve?

One of the best ways of making your money go further is to have your soil analyzed. When the results are interpreted, you may find that you need only one or two of the basic elements required by the plant. The application of all three elements in the form of a 6-6-6 or 8-8-8 could be unnecessary. Many nursery and garden supply stores will determine through soil analysis the elements needed. If they are not equipped to perform soil analyses your local County Agent can help you.

It is more advisable, says Florida Nurserymen and Growers Association (FNGA), to fertilize lightly, frequently, or to use a slow release fertilizer designed to feed the plants over a long period of time.

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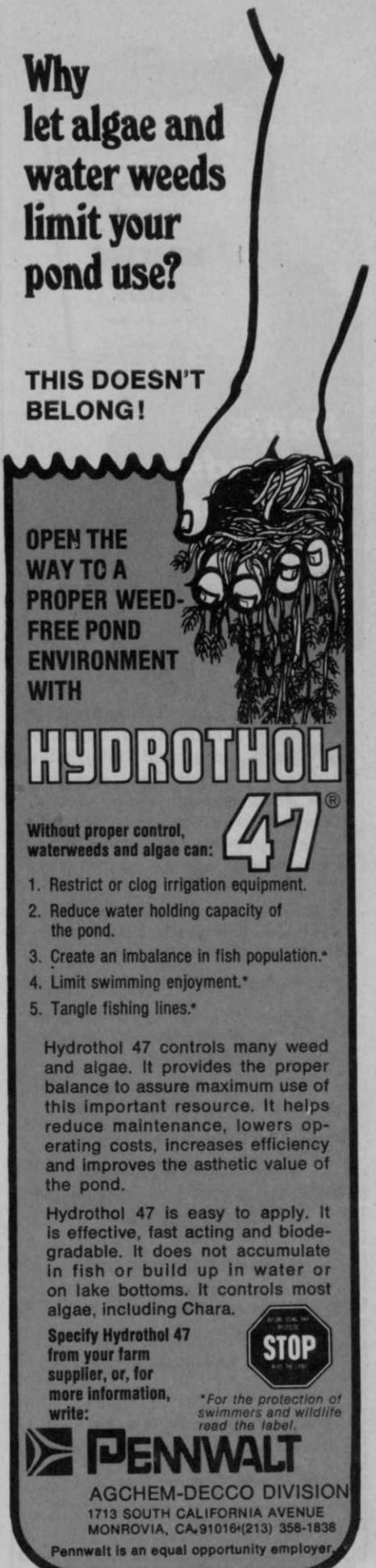
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Seven Years In Development . . .

Young Innovators Introduce Spike Method of Fertilization

The life and health of trees too often has been delegated to the whims of nature. Even with the many technological advances at our disposal, authorities agree that our most precious landscaping resource has long been neglected.

When the name of this publication was changed to WEEDS, TREES & TURF, one of the reasons was to put more emphasis on trees and their needs. Fortunately, we were right. Today trees are beginning to receive the recognition they deserve.

Though arborists say fertilization is important for strong, healthy trees, most methods used are inconvenient and time-consuming. Deep holes pounded or drilled around a tree and filled with fertilizer takes a long time and often is expensive. Broadcasting extra fertilizer on the soil surface can also present problems. Accelerated turf growth or "fertilizer burn" may result, as well as pollution run-off from heavy surface applications. Perhaps these methods have been the stumbling blocks to good tree care.

But now a new technique has been developed for fast, easy tree fertilization. It's the first advancement in tree fertilization in over 50 years, say some authorities. The innovation is a new tree food spike. Fertilizer is compacted under a patented process into a spike that guarantees a 16-8-8 analysis. Tree food spikes include a removable rubber cap to facilitate hammering them into the ground. Soil moisture does the rest.

This new method of fertilizing trees is Jobe's Tree Food Spikes. It took seven years to develop spikes into a marketable product, say the owners, Labe Jackson and Joe Owens, of Lexington, Kentucky. The name Jobe's was derived from a combination of their first names . . . Joe and Labe.

These two young men's families have been in allied agricultural businesses for many years. After three years of working with spikes on a small scale, Labe Jackson joined with Joe Owens and his family to produce the spikes efficiently in large quantities. That feat was accomplished in 1972.

As early as 1970, to verify their findings the two young men took their spikes to Purdue University's Agricultural Experiment Station. Purdue were especially interested in the spikes, for they were seeking fast and low-cost methods for fertilizing trees along the nation's vast Interstate Highway system.

Dr. Philip L. Carpenter and Dr. Robert E. McNiel of the Department of, Horticulture at Purdue tested the new spikes and reported that not only were they more efficient, but that tree food spikes could be inserted in the proper location nearly three times faster than conventional methods of fertilizing trees. In addition, the Purdue report concluded that the use of Jobe's Spikes for tree fertilization eliminated major problems encountered with previous fertilizing techniques. Today, trees along the Interstate system are a prime market for Jobe's.

For an early spring boost, Jobe's Spikes supply trees with a hearty reservoir of plant food, revitalizing them after a hard winter. Tests indicate that leaves grow faster. Fruit-producing trees that have been fertilized are also healthier and better withstand insect attacks. Spring is an ideal time to use spikes because the ground is moist. Since spikes last a year, they help develop root systems in the fall. This helps trees survive dry winds, rain, sleet, freeze and thaws of winter.

Jobe's Tree Food Spikes are currently being used in such well known places as Bellengrath Gardens, Biloxi, Mississippi; Colonial Williamsburg; the Ridglea Country Club, Ft. Worth, Texas; Wright — Patterson Air Force Base, Dayton, Ohio and the Veterans Hospital in Lexington, Ky.

Jobe's Tree Food Spikes are manufactured by International Spike, Inc., 462 East High Street, Lexington, Kentucky. Jackson is president of the firm and Owens secretary-treasurer.

industry people on the move

THOMAS R. LOY, appointed project manager for the corporate development section of Velsicol Chemical Corp. and **MARVIN R. FANNIN,** promoted to plant manager at Velsicol production facility in Beaumont, Texas.

* * *

Elanco Products Co. has promoted three men to district sales manager positions for their agrichemical products: **WILLIAM H. CULPEPPER, JR., JIM E. MEEKER and DAVID E. SMITH.**

* * *

JOHN T. SINGLETON, appointed to director of national institutional sales for the Toro Co. **JAMES W. ROBINSON** and **JOHN KING** join Toro as district sales managers.

* * *

ROD L. WOODWORTH, promoted to manager of engineering for the Municipal and Industrial Service Equipment Division of FMC Corp. The Engineering Department of FMC was increased by the creation of two new positions. **LANCE O. PRESNALL** named advance design manager and **MERLE EDWARDS** as project engineer.

* * *

JIM HOUSTON, joins Proturf as a technical representative in the London/Windsor area, **DENNIS KASPER,** promoted to technical rep. from Scotts' retail division and **BOB WRIGHT,** apppointed to manager of international market development.

* * *

JAMES DONOHUE, named district sales manager for Lawn-Boy in Missouri and five neighboring states.

* * *

GRANT HANSON, appointed to district manager for Rain Bird Corp. He will handle both agricultural and turf irrigation sales for Idaho, Montana, Wyoming, Nevada, Utah and Colorado.

* * *

RICH BALDWIN, named regional manager for the northeastern sales territory for Badger Dynamics Inc.

* * *

F. G. SCOTT, named senior vice president of Case and general manager of the construction equipment division. Scott has been executive president of Walker Manufacturing Co.

* * *

WILLIAM S. HOWARD, joins Hesston Corp., as general manager of their new lawn equipment division in Indianapolis, Ind., **N. VINCE HEMINGSON,** was promoted to sales manager for the new division and **LYLE E. YOST,** president of Hesston, has been named Kansan of the Year.

* * *

V. HUBERT BROGDON, JR., promoted to vice president of Freeport Sulphur Co. Brogdon is also assistant vice president of the parent company.

* * *

HENRY B. EVERHEART, appointed as Southwest Regional Manager for Turf-Vac Corp. as part of the company's current drive to provide more field assistance to its distributors in North America.

* * *

ROBERT P. BARNETT, elected executive vice president of ICI America Inc., by its board of directors. Barnett will be responsible for some 1500 employees.

* * *

MARY RICHARD VESTER, joins the public relations staff of Ciba-Geigy Corp., Agricultural Division. She will edit the monthly publication, BROADCAST, coordinate employee and community relations programs and handle assignments in general news writing and placement.

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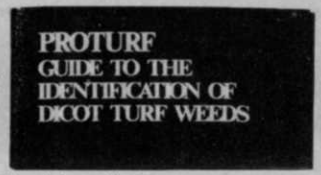

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O.M. Scott & Sons, Marysville, Ohio 43040

Sweet Sounds

(from page 47)

ment powered by industrial engines produce over 90 dBA. Just how much more depends on many things: make, model, condition (especially muffler condition), local conditions (are sound reflecting surfaces present, such as concrete pavements?) and how the machine is being used.

Manufacturers should be able to tell you what the sound output of their equipment is, but remember that the figures they supply will be for machinery in new condition operated under optimum conditions.

Sound level meters cost several hundred dollars, and you probably won't want to buy one, so your best bet is to borrow one or employ a specialty service to make the measurement for you. But first check your insurance carrier — they may be able to do the work for you — free.

Let's assume that you do have a problem. You have a four man crew working with a machine that, when new, produced 100 dBA but now, because of a bad exhaust system and some worn gears, produces 110 dBA. One man runs the machine about 4 hours a day, so you give him some hearing protection and he uses it faithfully.

Are you in compliance? No, you are not!

Read paragraph (b) (1) in 1910.95 again. It says that when your employees are subjected to sound levels exceeding those in Table G-16, feasible administrative or engineering controls shall be utilized. That means that you must first do all you can to quiet the machine. In this case, a new exhaust system and engine overhaul would reduce the sound level to 100 dBA. A compliance officer would require you to do the work, and give you a limited time to do it. So you pay the price to have the work done only to find you're still not in compliance.

Note Table G-16 — daily allowable exposure to 100 dBA is two hours, but your man is getting four. You'd be expected to handle this administratively, by splitting the work between two men. This way, each man would be exposed to 100 dBA for only two hours a day, which is acceptable. If you could show administrative controls were not feasible, because the machine operator was the only man qualified for the job, then you would comply by using hearing protection.

Compliance with 1910.95 may seem to be a lot of trouble, and even unnecessary, to some. Realistically, it isn't. Excessive noise has been demonstrated to be injurious to our hearing. It's also annoying and can actually produce fatigue. Talk to any man who has been wearing hearing protection in a noisy environment he'd previously worked in without it. Invariably, they think it's great and will tell you that they feel better and more relaxed during the day, and less tired at the end of the day. Clearly, noise control is to everyone's advantage.

But, what about the future? The advisory committee on noise has recently recommended a revision in the regulations on noise which, if adopted, would include a requirement for audiometric testing for all employees exposed to sound levels above those in Table G-16, even though hearing protection has been worn. Such a regulation would require the employee to be tested within a short time after his initial exposure, and periodically thereafter. The test would have to be given by a fully qualified technician, and detailed records of the tests would have to be kept by the employer.

If you're located in an area where test facilities are readily available, tests can be made without too much trouble. If your employees are grouped together, a mobile unit can be brought to them at a relatively low cost per test. But, suppose these facilities are not available locally? You'd have to send the employees to wherever they are available. How would you like that?

The purpose of such an audiometric test program, it is said, is to insure or test the effectiveness of the hearing conservation program. But, would it? An employer can control his employees' exposure to noise only during the working day. What the employee is exposed

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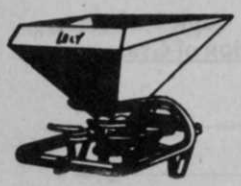

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to during the other 15 or 16 hours is something else. Audiometric testing can show that a man has, or has not, had his hearing ability impaired, but it cannot show where, when or how.

Clearly, there are two actions required by responsible employers.

First, know what the law requires, and comply. It's to everyone's advantage, including your own.

Second, keep informed on what your lawmakers are doing. Proposed regulations are published in the FEDERAL REGISTER, with information on how to make comment. When proposals are made that you don't agree with, say so. The people who write the regulations in Washington truly are interested in what you think and want your help. They're hardworking, concerned people who are trying to do a good job. But, as one OSHA official put it, "If we propose a regulation and hear no comments on it, we can only assume that we are exactly right or else nobody cares".

Need more be said? □

1910.95 Occupational noise exposure.

(a) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at slow response.

(b) (1) When employees are subjected to sound exceeding those listed in Table G-16, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of Table G-16, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

(2) If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous.

(3) In all cases where the sound levels exceed the values shown herein, a continuing, effective hearing conservation program shall be administered.

Table G-16—Permissible Noise Exposures[1]

Duration per day, hours	*Sound level dBA slow response*
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

[1] When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C1/T1+C2/T2$ Cn/Tn exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Reprinted from the *Federal Register*, Vol. 37, No. 202, Oct. 18, 1972.

Landscape Awards Presented by First Lady

For the third time in the 21 year history of the program this year's Landscape Awards Ceremony of The American Association of Nurserymen took place at the White House. Mrs. Richard Nixon presented awards to individuals, business and industrial firms, institutions and municipalities involved in 21 outstanding environmental landscaping achievements at the White House.

The New Sticker-Extender That Prolongs Pesticide Effectiveness.

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What Is The Real Value of a Tree?

ASCA Meeting Report

At the eighth annual meeting of the American Society of Consulting Arborists a panel of the members plus speakers from the Internal Revenue Services, the insurance industry, and the state treasurer's office of Florida, sought information on something which Joyce Kilmer knew in 1913.

When Kilmer wrote his poem "Trees" he knew the value of a tree. And today the arborists are still looking for a tree evaluation formula which will be satisfactory to the homeowner who loses a tree, the insurance company which is asked to pay on a tree-loss, and the IRS which takes a close look at casualty losses claimed on income tax returns.

An interesting tie-in between Joyce Kilmer who was killed in World War I and the arborist of 1974 was brought about by Rutgers University, in New Brunswick, New Jersey. The University presented to the American Society of Consulting Arborists a gavel and block made from the wood of the old Kilmer oak.

Joyce Kilmer was a student at Rutgers University prior to his enlistment in the army, and on the campus was a huge white oak said to have inspired his now-famous poem. The tree was finally taken down in 1963 after years of gradual decline. At that time it was 68 feet tall, had a spread of 108 feet, and a trunk diameter of 54 inches. From the wood of the old tree, Rutgers University made the gavel and block presented to ASCA President Walter Morrow at the recent meetings.

At the annual meeting in Tampa, Florida, ASCA devoted three days to discussions of tree values. Ray Gustin, Jr. (Maryland) headed a panel of guest speakers consisting of Internal Revenue Agent John Pitcher from the Tampa offices, William McCue from the Florida state treasurer's office in Tallahassee, and William Carter from the General Adjustment Bureau in Tampa.

Following their discussions on what they thought a tree was worth, the ASCA membership set out to update their viewpoints to be more in line with ours. Case history committee chairman, Fred Micha (New York) was instructed to immediately contact the National Insurance Associations in an attempt to reconsider their 1954 declaration that maximum payment for tree loss on a homeowner policy was $250.

Past president Dr. L. C. Chadwick (Ohio), with a panel of two nurserymen — Valleau Curtis (New York) and Arnold Webster (Iowa), and three well recognized "big tree" movers — William Rea (Mass.), Edwin Irish (Mich.), and O. J. Andersen (Texas), supplied fuel for the burning of the old fashioned ideas of tree values. The ASCA nurserymen presented actual figures on costs of raising various kinds and sizes of shade trees, and the ASCA "big tree" movers quoted costs of moving and planting the large specimens to replace those lost by hurricane, lightning or other types of casualties.

It is the anticipation of ASCA that the continued examination of all facts dealing with tree costs will bear fruit in the acceptance of more realistic values for tree losses by both the insurance companies and the Internal Revenue

(continued on page 60)

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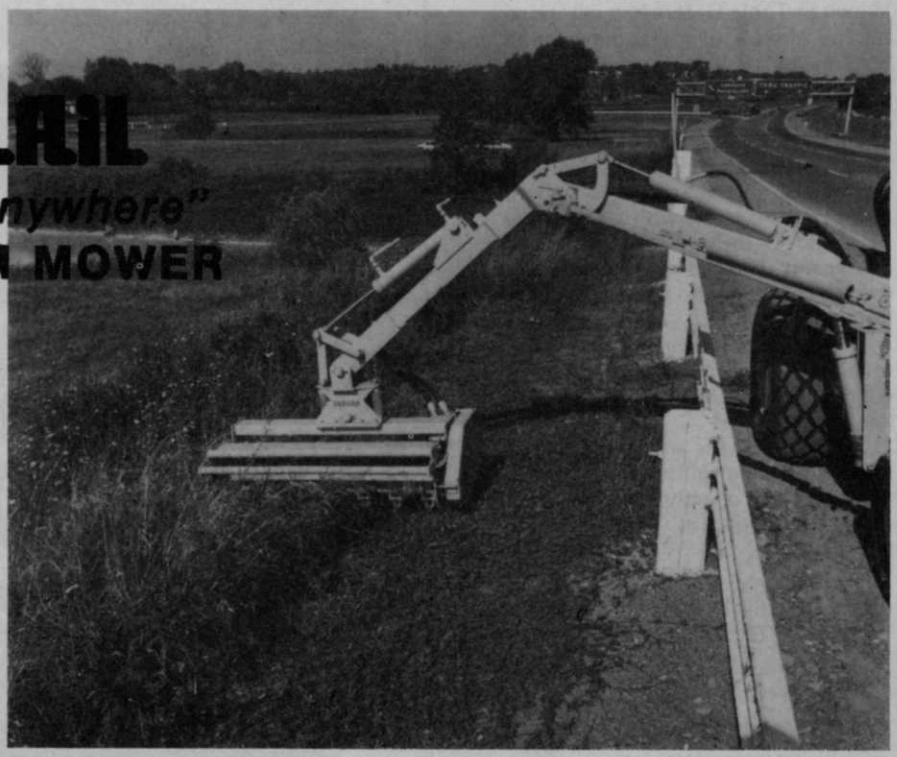

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—insect report—

INSECTS OF ORNAMENTALS

EASTERN TENT CATERPILLAR

(Malacosoma americanum)

TEXAS: Reported in crab apple and plum in Brazos County. Populations appear very light this year in most central area counties.

WHITEFLY

(Aleuroplatus berbericolus)

NEW MEXICO: Collected from *Mahonia* sp. at Roswell, Chaves County. This is a new State record.

SOFT SCALE

(Cerpolastes ceriferus

SOUTH CAROLINA: Light on euonymus in Marlboro County. This is a new county record.

PIT SCALE

(Cerococcus deklie)

FLORIDA: Adults general on stems of 10 Coastal Plain willow trees *(Salix caroliniana)* at country club in Miami, Dade County. This is a new host record in State.

TREE INSECTS

SOUTHERN PINE BETTLE

(Dendroctonus frontalis)

ALABAMA: Nearly grown larvae of *D. frontalis* and *D. terebrans* (black turpentine beetle) heavy in 5 to 25 dead and dying pines near Chewacla Park, Lee County. Two of these 40-foot pines practically cleaned of bark. Beetle broods fed on by flickers and sap suckers, but still numerous enough to bring on population explosion in this 200-acre tract of pine timber. Several new pitch tubes of *D. terebrans* observed in area; beetles moved in on these and nearby pines during past 30 days of warm temperatures. About 500 pines killed in Mount Olive area of Jefferson County; many more trees on area infested. Full-grown larvae and pupae collected.

SEQUOIA PITCH MOTH

(Vespamima sequoiae)

WASHINGTON: Larvae ranged 2-10 per tree on ten 10-foot tall ponderosa pines at Centralia, Lewis County. Pitch masses ranged 1-10 per tree on 10 of fifty 10 to 25-foot tall ponderosa pines at Bellevue, King County.

PINE SPITTLEBUG

(Aphorphora parallela)

TENNESSEE: Active on Scotch pine much earlier than normal in western area.

EASTERN TENT CATERPILLAR

(Malacosoma americanum)

SOUTH CAROLINA: Moderate larval infestation noted on cherry in Marlboro County. This is a new county record. ALABAMA: Larvae in cherry and other trees in several southern counties nearing full growth. TENNESSEE: Active on wild cherry in central and western areas; webbing very apparent in some areas. Emergence very early this year; no damage to date. KENTUCKY: Egg hatch about 50 percent complete in central area.

FALL WEBWORM

(Hyphantria cunea)

NEW MEXICO: First adult of season taken in light trap at Las Cruces, Dona Ana County.

OLETHREUTID MOTHS

(Rhyacionia spp.)

NEW MEXICO: *R. neomexicana* moth reared from pupae near Ruidoso, Lincoln County. This is a new county and forest record. CALIFORNIA: *R. bushnelli* pupae moderate in tips of shoots of Monterey pine trees in El Cajon and Santee, SanDiego County.

WHITEFLY

(Aleurochiton forbesi)

NEW JERSEY: Collected from *Acer platanoides* (Norway maple) at Lake Hopatcong near Rockaway, Morris County. This is a new State record.

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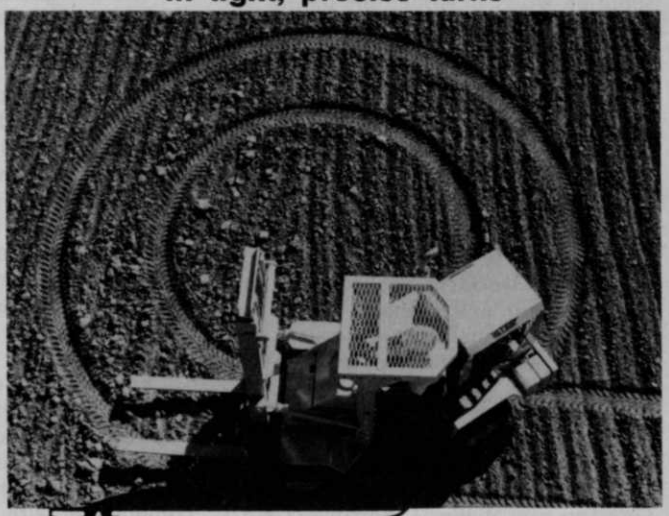

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ASCA (from page 58)

Service.

Author of the recent book, "The Private Practioner in Agriculture", Dr. Robert S. Cox of Lake Worth, recounted many of the interesting portions of his book as he addressed the meetings. Cox, a former university professor now in the field of private consultation work, described the pitfalls to be avoided while consulting as well as highlighting the methods which proved most beneficial to him.

W. Doyle Kincade (Colorado) presented a self-contained package he developed for showing to school children as well as adult groups. The two 35mm projectors synchronized with tape recorder fascinated even the more "hardened" ASCA members as the story of the trees - woods- rivers - streams unfold in picture and sound.

During the final business sessions the following were elected to lead ASCA during 1974: W. Roland Shannon (Penn.), President; O. J. Anderson (Texas), President-Elect; F. Earle Martin (Ontario), Vice President; William P. Lanphear (Ohio), Secretary-Treasurer. Directors are: Walter J. Barrows (Cal.), Wilfrid Wheeler, Jr. (Mass.), Charles H. Michler (Kentucky), and Arnold Webster (Iowa). Walter P. Morrow (Penn.), as immediate Past President will also serve on the Board of Directors. Dr. Spencer H. Davis, Jr. was reappointed as the Executive Director.

Chelated Micronutrients From New Plant

Agriculture has better access to a supply of fully chelated micronutrients with the opening of a new production plant at the Western Division of Dow Chemical U.S.A., Pittsburg, Calif.

The new plant, which began operation in late February, is the only facility west of Freeport, Texas, designed specifically for the production of chelated micronutrients.

Manufactured products will be marketed primarily in the western U.S., but also will be available to the general national agricultural market as well.

The plant will initially produce Versene AG brand one-pound zinc micronutrient, one of five fully chelated micronutrients available under the Versene AG and Versenol AG trademark.

Versene AG one-pound zinc contains one pound of fully chelated zinc in every gallon. It requires less storage and handling and is simple to formulate.

Dow recommends for use alone, in combination with fertilizers or as foliar spray. They are most effective when placed in the root zone during planting or moved into the soil by irrigation, tillage or rainfall.

Rates of application will vary depending upon the severity of the deficiency, climate and soil conditions and method of application.

For further information, contact Dow Chemical U.S.A., Designed Products Department, 2040 Dow Center, Midland, Mich. 48640.

Environmental Stress Victimizes Windbreaks

USDA foresters say that trees established in the Plains are subjected to greater stresses in moisture, temperature, and wind than trees in naturally forested areas. To avoid further jeopardizing these trees' existence, they advise extra protection from outside agents such as insects.

According to officials at the Rocky Mountain Forest and Range Experiment Station, frequent tree inspections and early recognition of insect damage are the main ingredients of an effective insect control program.

The most common insects attacking windbreaks in the Plains' areas are leaf eaters. These insects may include spring and fall cankerworms, tent caterpillars, webworms, bagworms, elm leaf beetles and grasshoppers.

Insects can cause defoliation and repeated attacks can seriously weaken and ultimately kill a tree. Trees weakened by insects are also more susceptible to various diseases.

Whenever insect damage is suspected, tree owners are advised to collect specimens of the insect and damaged area for identification. These specimens will enable a county agent or extension service entomologist to identify the insect; determine the need for control, and advise on control measures.

Sevin insecticide is widely recommended and used for control of insects plaguing Plains trees. It may be applied with ground application equipment at the rate of 1 lb. active Sevin per gallon of water. It also may be applied by air.

Sevin is cleared for control of a number of shade tree, ornamental and turf insects. It is biodegradable and is low in toxicity to people, farm animals, birds and fish.

Microfiche Catalog System Speeds Parts Indexing

Ryan turf care equipment has converted its parts catalogs into a microfiche system.

Microfiche are 4 by 6-inch film cards that are indexed for quick access through a reader. A parts page is reduced 24 times in size on a microfiche card.

Compatable systems already in use throughout the industry assure simplicity, speed and standardization. The microfiche system will also enable dealers to free up counter space previously devoted to parts catalogs. The system was developed by Xerox and was introduced in April.

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Handles many kinds of weed and pest control chemicals including wettable powder suspensions.

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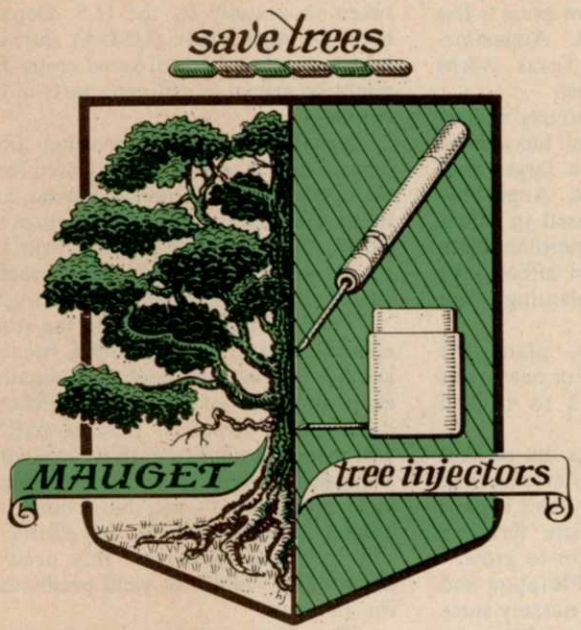

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PINES	Red Spider Mites, European Pine Sawfly, Southern Pine Beetle and Pine Spittlebug

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Chlordane Capacity Boosted by Velsicol

Velsicol Chemical Corp. is increasing its manufacturing capacity for technical chlordane by 50 percent.

"The environmental pressures on other insecticides have increased the demand for chlordane, worldwide," said Robert N. Morris, Velsicol's president and chairman of the board. "We expect approximately half of the increased capacity to be on stream by October of this year and the other half by mid-1975."

Sales of chlordane have increased not only for agricultural and pest control uses, but also for the home, lawn and garden markets.

Floratam Grass Hits Consumer Market

Floratam, a new variety of St. Augustinegrass resistant to chinchbugs and St. Augustine Decline (SAD), is now available to homeowners, notes Dr. Walter Walla, plant pathologist for the Texas Agricultural Extension Service.

The new grass was developed jointly by the Florida and Texas Agricultural Experiment Stations. It was released to commercial sod producers in 1972.

"Besides being resistant to SAD and chinchbugs, Floratam is also tolerant to downy mildew and gray leaf spot. However, brown patch and rust still pose problems, and the new grass is less hardy than Common St. Augustinegrass," points out the Texas A&M University System specialist.

The new grass is moderately coarse-textured, is fast-growing and has a dark-green color. It also has a larger root system than common St. Augustinegrass. Floratam can be used in establishing a new lawn or for interplanting in established lawns that are affected by SAD. However, late fall planting is not recommended.

"When interplanting, plant the sprigs on 18-inch centers. For new lawns or seedbeds, plant on 12 to 18-inch centers," suggests Walla.

"Keep unplanted sprigs out of heat and drying conditions. After planting, water the grass thoroughly and keep it watered. Apply a complete fertilizer when the new runners begin to grow.

"Be sure to purchase Floratam sod or sprigs from a reputable nursery since it is hard to distinguish from Common St. Augustinegrass," advises Walla.

Fiber for Paper Making Discussed in Bulletin

Kenaf, a promising new annual source of raw material for paper pulp, could help solve the national shortage of timber used in paper manufacture. An important step in evaluating the commercial potential for kenaf has been taken in a study by the U.S. Department of Agriculture (USDA) showing how to predict yields of kenaf crops that might be grown in different parts of the country.

Kenaf is a rapidly-growing fiber plant found in a wild or cultivated form in Africa, Central America, Russia, and other temperate and tropical parts of the world. Paper pulp can be made from the woody stems of the plants, which reach a height of 12 to 20 feet at time of harvest.

Yield estimates derived in the study appear realistic and are timely because kenaf is nearing commercial production, according to scientists of USDA's Agricultural Research Service (ARS). The report also indicates that more work is needed to develop an ideal system of yield prediction — one that would give greater consideration to the effects of soil moisture. However, this need is common to studies of yield predictions for all crops.

The ARS bulletin describes how kenaf yields might be predicted by a systematic evaluation of leaf development and stem heights. More than 20 tons per acre of kenaf could be expected under good conditions in southern Florida and Texas. Between 10 to 12.5 tons per acre might be obtained as far north as eastern North Carolina. Yields are also shown for Glenn Dale, Md., where the research was conducted.

Details are given in Technical Bulletin No. 1477, "Kenaf Leaf Development and Stem Height: Index of Crop Yield in the United States." Copies are available at 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Railroad Elimination Challenged by Vistron

A plan proposed by the U.S. Department of Transportation (DOT) to eliminate extensive railroad lines in the Midwest has been challenged by a mid-continent petrochemical company.

The Vistron Corporation, Cleveland, Ohio, said that abandoning rail service to the area would deprive customers of the fertilizer they need, or it would have to be shipped in by other means at substantially higher costs.

In testimony before the Interstate Commerce Commission (ICC), company representatives indicated that they had built or purchased 106 retail fertilizer outlets in six Midwestern states. The outlets marketing fertilizer under the Sohigro brand, are located on railroad sidings. Only 31 of the outlets would be left with rail service under the proposed plan.

Two basic plant nutrients, potash and phosphate, are mined at considerable distances from the Midwest. This necessitates long-haul traffic. According to a company representative, the

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APPROXIMATELY 80% OF PLANT NUTRIENTS removed in crops fed to livestock is returned to the soil as manure.
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only practical alternate is rail to a central location and reship by truck to the customers.

The company said this alternative would increase transportation costs for fertilizer from a low of $4.88 per ton, to a high of $9.40 per ton. "This additional cost would have to be passed on to the customer in the form of higher fertilizer prices."

The elimination of branch lines would not only incease fertilizer costs but all equipment, chemicals and materials formerly transported by rail would undergo similar price increases.

Sulpher Price Rise Announced by Freeport

Freeport Minerals Company announced a general increase of $5.50 per ton in its domestic prices for sulphur.

Also its charges for transportation, terminaling and insurance for delivery of the sulphur to its customers would be increased to reflect its costs of providing those services.

The increase makes Freeport's price for regular dark sulphur f.o.b. Port Sulphur, La., $33.50 per ton, and in the Florida market, the largest sulphur-consuming market in the world, $36.50 per ton, f.o.b. Tampa terminal. They did not announce specific prices in other markets but said that these prices reflected the differences in transportation, terminaling and other costs to these destinations from Port Sulphur.

The domestic price schedule will apply as government price regulations and contract provisions permit.

U.S. Forest Service Plans Go-ahead for DDT

Last month the Environmental Protection Agency authorized the emergency use of DDT for control of tussock moth. The conclusion on probable need to use DDT is the subject of an analysis and final proposal developed by the Forest Service, in cooperation with the U.S. Department of Interior's (USDI) Bureau of Land Management and Bureau of Indian Affairs, Oregon State Department of Forestry, Washington Department of Natural Resources and the Idaho Department of Public Lands.

John R. McGuire, chief of the Forestry Service, said the final environmental statement on tussock moth control was filed recently in Washington, D.C., with the Council on Environmental Quality.

McGuire added that the analysis indicates the necessity to plan now to use DDT to control the outbreak, in order to prevent widespread damage to the forests and related resources. The conclusion is based on the latest count of natural occurring virus that kills the caterpillar stage, the count of living eggs, consideration of all alternatives and public response to the statement.

The effects of natural factors will have to be determined by field observations in specific areas before spray plans are made final. Exact acreage figures, therefore, will not be available until the time that spraying must begin, in late May or June.

In addition to control efforts, field experiments and pilot projects will be conducted this year. Scientists have developed formulations of a natural virus and a bacterium which have shown control potential but further testing is needed.

Congress is considering a request for $3 million in supplemental funds to control the outbreak. It had earlier appropriated funds to expedite research and to salvage timber killed as a result of earlier defoliations by the tussock moth.

If treatment is necessary, helicopters will apply DDT at the rate of ¾ pound in one gallon of fuel oil per acre, probably starting about June 1. Chief McGuire said all applications will be carefully supervised and monitored in a cooperative effort involving the Forest Service, Environmental Protection Agency, and USDI's Bureau of Sport Fisheries and Wildlife, Bureau of Indian Affairs, and Bureau of Land Management, and some 30 state agencies and organizations.

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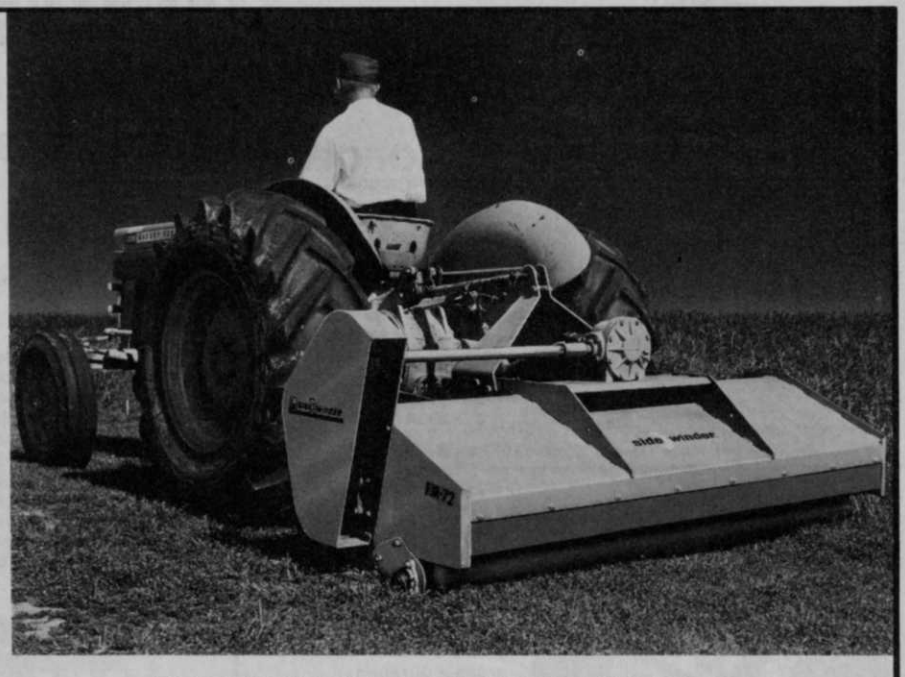

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Copies of the final statement have been mailed to various state, federal and local agencies and leading national organizations for review and comments. The statement will also be available for inspection about April 3, during working hours, at the office of the Chief of the Forest Service and at the following places: Forest Service regional offices in Portland, Ore., Ogden, Utah, and Missoula, Mont.; forest supervisors' offices in Pendleton, Baker and John Day in Oregon, Okanogan, Colville, and Wenatchee in Washington, McCall, Boise, Twin Falls, Grangeville and Coeur d'Alene in Idaho.

It will also be available for purchase from the National Technical Information Service, Department of Commerce, Port Royal Road, Springfield, Va. 22151. Cost per copy has not yet been determined.

Servis Equipment Co. Changes Name to Austin

Servis Equipment Co., Dallas, Texas, will now be operating under the new corporate name of Austin Products, Inc.

Austin will continue to market rotary cutters, utility blades, rakes, scrapers and other shortline implements under the "Servis" brand. Tillage tools will be marketed under the "Athens" brand.

The announcement of the name change was made following the annual directors and stockholders meeting.

Western Timber Exports Banned by USDA

Exports of unprocessed timber from National Forest lands in the west were banned by the U.S. Department of Agriculture in line with new appropriations act language.

Assistant Secretary of Agriculture Robert W. Long also announced that no longer will timber from western National Forests be sold to replace timber cut on private lands and exported.

The changes affect the National Forests in the 48 contiguous states west of the 100th meridian, which runs from central Texas to central North Dakota. Language in the 1974 appropriations act called for a ban on sale for export of unprocessed timber from these forests and also for a prohibition on substitution of federal timber for exported private timber. Processed timber, which includes such manufactured products as lumber, construction timbers, plywood, pulp and pulp products, poles and pilings, may continue to be exported without restriction.

Previously, legislation had permitted annual sales for export of up to 350 million board feet of unprocessed timber from these National Forests. There were no regulations governing substitution.

The new regulation was firs proposed last Oct. 26. In line with public comments and suggestions, the definition of "substitution" was changed to mean the purchase of National Forest timber or the export of private timber in amounts exceeding historic levels.

The definition of a cant as processed timber was not changed. A cant is a timber which is sawn on two sides and is no thicker than 8-¾ inches. It is later remanufactured into more finished products, such as boards.

"Many people advocated that a cant not be defined as processed timber, but many others were opposed to a change at this time," said Forest Service Chief John R. McGuire. "Since the evidence either for or against a change is not conclusive, the Forest Service will hold public hearings on the west coast in about three weeks to obtain more complete information on the question. If the hearings uncover evidence of the need for changes, they will be made."

Persons considering investments in plants for producing cants from National Forest timber would be advised to defer their decision, Chief McGuire cautioned.

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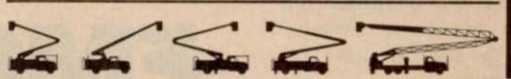

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Stepped-Up OSHA Plan To Halt Job Hazards

Two federal job safety and health agencies will launch a joint project to speed the development and expansion of health standards to protect American workers from on-the-job hazards.

Over a 30-month period, the project will periodically issue completed rules and regulations governing approximately 400 toxic substances. An initial package of 40 standards is planned for the pilot program. At present, standards exist for the 400 substances but provide only threshold limit values for employee exposure.

Formal announcement of the $3.5 million project was made by Assistant Secretary of Labor John H. Stender, head of the Occupational Safety and Health Administration (OSHA) at a meeting of the National Advisory Committee for Occupational Safety and Health (NACOSH) in mid-March.

OSHA and the National Institute for Occupational Safety and Health (NIOSH) of the Department of Health, Education, and Welfare, are the coordinating agencies. NIOSH is the research arm for OSHA, which enforces federal job safety and health laws.

During the past year, Stender has established as a high OSHA priority an increased emphasis on occupational health. In a current reorganization within the job safety and health agency, he said he would substantially increase the number of health standards personnel. Additional compliance officers also are being recruited.

On Jan. 29, OSHA published 14 health standards to protect workers from cancer-producing substances used in industry. More recently, the agency began an investigation into the dangers of vinyl chloride following reports of deaths and illnesses among workers engaged in the use of this substance.

The completed standards would prescribe informing employees of hazardous substances, emergency treatment in the event of accidental exposure, and proper conditions and precautions for safe use of the substances.

The standards also would prescribe protective clothing and/or equipment, monitoring or measuring exposure conditions, recordkeeping requirements, and the type and frequency of medical surveillance for employees.

City Trees

(from page 30)

many trees will need to be planted, so many trees will need to be removed, and so much pruning will be needed during the next five or ten years." If planning is done systematically, it will be easier to budget and gain citizen participation.

A five-year planting plan would segregate species of trees into small, medium, and large sizes. Recommended species by size class, would then be programmed by year of planting. Ideally, the medium and large long-lived trees should form the "core" of street trees. Some of the better trees in Kansas for this purpose are bur oak, hackberry, London plane, and honeylocust. These trees should be complemented with small flowering trees such as redbud, flowering crab, and hawthorn.[3]

Unless a particular, declining tree has sentimental or historical value, it would not be economical to try to save it. The most expeditious plan, especially for smaller communities, would be removal or replacement.

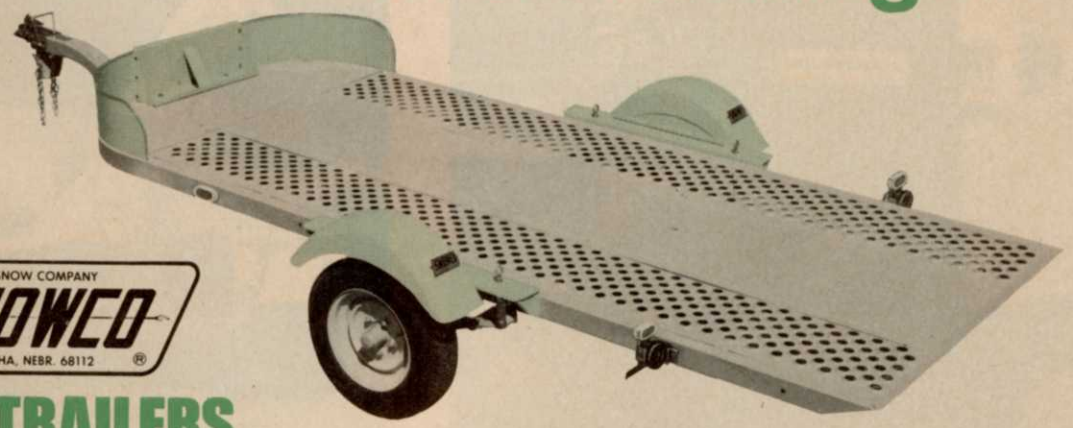
TREE PLANTING WORK PLANS

Annual work plans necessary to accomplish long-range goals should be carefully prepared and specified to complete immediate tasks. One alternative is to have municipal government assume total responsibility for the planting program. This includes purchase of trees, planting, site location, and actual planting.

Another alternative incorporates projects that can be developed and coordinated by the City Tree Board or another equivalent body. Garden clubs, Lions, Rotary, or Scouts are several of the organizations that could contribute

(continued on page 68)

The Low-Down on Hauling...



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LARGE-CAPACITY FERTILIZER SPREADER: Vicon Farm Machinery, Norfolk, Va.

The new Model PS 1001 is designed to fit the 3-point hitch of larger tractors but may be adapted with wheels for lighter tractors. Capacity is about 2400 pounds, with a spreading width of up to 45 feet. This unit uses a spreading method of a fast-action spout moving back and forth 540 times per minute. This action gives a rectangular coverage pattern which eliminates overlapping and missed spots. For more details, (circle 701) on the reply card.

THREE-TON CAPACITY MOVER: Farmhand, Inc., Hopkins, Minn.

Here's a low-profile mover that's ideal for the sod producer-installer. It virtually eliminates towing a forklift to the job. The unit features all welded construction and four 3 inch x 5 inch wall tubing 'live' bed beams with detachable steel chains. Mounted on 11L x 15 tires, the mover rises only 22 inches above the ground at the top of the beams, assuring a minimum tilt angle for loading and unloading pallets. Total length of the mover is 21 feet and the width is 16 feet 3 inches. The empty weight is 1900 pounds. For more details, circle (702) on the reply card.

CLIPPING SPREADER: Ginther Equipment Corp. Arcadia, Calif.

Get rid of your green or tee clippings and use them at the same time. The mower operator empties his clippings into the spreader at the green and spreads the clippings at the desired thickness on the fairway or rough as the spreader is towed by the mower on the way to the next green. Its capacity is sufficient to handle the clippings of two adjacent greens. It eliminates grass piles, hot spots, pick-up man, truck, gasoline and smell. For more details, circle (703) on the reply card.

'QUIET' BRUSH CHIPPER: Olathe Manufacturing, Inc., Paola, Kan.

This machine chips brush, limbs and Christmas trees with an all new chipper rotor design. Rotor noise levels have been reduced to below the 85 decibels now recommended by EPA. The model No. 800 is a 16" chipper powered by a 330 cubic inch industrial V-8 engine. Not only will this chipper handle the usual green and dry limbs, but the manufacturer claims it will also chip kiln dried lumber without reguard to wire, nails, small bolts or staples. For more details, circle (704) of the reply card.

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City Trees

(from page 65)

to a tree planting project.

A planting project can be divided into eight components. It would be a community choice to take the optimum combination of the parts for its own project.[9]

Order Taking: a. Contact property owners personally and take orders. b. Mail tree order forms to property owners. This can be done by direct mail or included with utility statements. c. Print cut-out form in newspaper. d. Publicize project by newspaper and radio and take telephone and/or personal orders.

Payment: a. Take advance payment from property owners and only order trees for which money has been received. b. Purchase trees from city funds and bill property owners later. c. Purchase trees from city funds and provide free to property owners. d. Solicit donations to establish tree planting fund. e. Take short-term low or no-interest loan from bank to establish tree planting fund.

Purchase: a. Purchase trees direct from local nursery. b. Purchase direct from wholesale nursery. c. Solicit bids from two or more nurseries. d. City owned nursery.

Receipt and distribution of trees: Receipt: a. Specify that nursery deliver to a central location. b. Arrange to pick up trees at nursery. Distribution: a. Have property owners pick up trees at central point. b. Deliver to individuals.

Planting site locations: a. Locate and stake individual planting spots (this should be done in advance of ordering in order to fit trees to sites). b. Enact city ordinance providing for street tree planting. c. A combination of a and b.

Planting: a. Have property owners do complete planting job. b. Arrange to have holes dug by utility company or other organization as public service and have property owners plant trees. c. Arrange for Scouts, 4-H club or other youth organizations to plant trees. d. Arrange for local students or other individuals to plant trees upon request. (Property owners could contact them if they wanted their trees planted). e. Arrange for city crews to plant trees.

Immediate maintenance: a. Have property owners maintain trees (watering, pruning, weeding, etc.).b. Arrange for city crews to water and maintain trees. c. Add a maintenance charge to purchase price of trees to provide a fund to hire a student or other individual to maintain trees throughout the spring and summer.

Ceremonies: a. Arbor Day (14) is traditionally set aside for planting trees and is an ideal occasion to have a planting ceremony.

MAINTENANCE

Programmed maintenance, both

For More Details Circle (165) on Reply Card

public and private including citizen participation, is essential to the prolonged success of a community forestry program. The City Tree Board should establish routine maintenance schedules and invite the general populace to share in some of the activities. Maintenance workshops for concerned townspeople could be conducted by the Board or a consultant expert.

Instructors could be Kansas Extension Personnel, commercial arborists, or a member of the community experienced in tree maintenance. State and extension foresters of Kansas, on a regular basis, hold day-long regional workshops in the winter for City Tree Board members and other city officials. These workshops concentrate on identification of common community forestry problems, alternative solutions, and development of individual work plans. A follow-up series of summer meetings is held in the participating communities with on-site demonstrations. The following topics are among those included: 1. Pruning. 2. Tree disease and insect damage diagnosis, with controls. 3. Cavity work. 4. Cabling and bracing. 5. Transplanting. 6. The right tree for the site.

COOPERATION IS ESSENTIAL

It should be emphasized that private enterprise as practiced by landscape gardeners, commercial arborists, nurserymen, groundsmen, and urban vegetation maintenance firms should and must be relied upon to conduct the majority of the tree growing, planting, and maintenance functions in communities both large and small.

As a point of historical reference, the Kansas Arborists Association, in 1962[23] supported the notion that "Urban Agriculture" activities be expanded and strengthened within the United States Department of Agriculture. The Association further resolved that similar programs not be incorporated within the, then proposed, Department of Urban Affairs. (Incidentally, the Department of Housing and Urban Development does engage in some academically stimulating duplication of programs especially in the area of landscape horticulture.)

In a very affirmative statement concerning cooperative urban forestry, Barber[2] stressed that "In all cases the facilities and services of private enterprises would be used to fullest extent possible. Contractors, tree repair experts, commercial nurseries, these and others would find important roles in cooperation with the responsible State agency." The Sikes Bill of 1972 further reads that ". . . provisioning of this Act . . . encourage the utilization of private agencies and individuals furnishing services of the type described (urban vegetation management) . . ."

Very often, municipalities believe they can save money by operating their own tree nursery, but more have failed than succeeded. Commercial arborists can solve tree problems in small communities lacking funds to employ a full-time municipal arborist.

The key to a successful Community Tree Program is to blend the resources of the municipality, its citizens, public agencies, and private industry. In Kansas, the combination pays off!□

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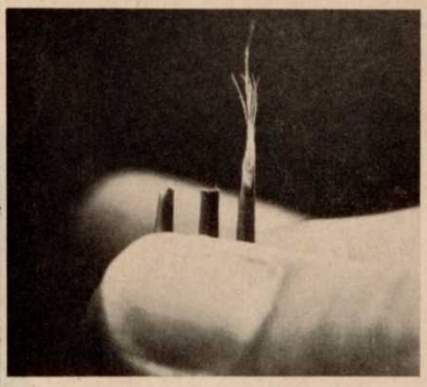
A monoculture of city trees — American elms lining a street in Manhattan, Kansas.

Can you tell ryegrass from bluegrass?

(Careful.)



This photo shows *two* fine-leafed ryegrasses and one Kentucky Bluegrass. The grass on the right is obviously a ryegrass. Of the other two, which is the ryegrass and which is the bluegrass?

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These American elms, planted in a "tree monoculture," are dying from the combined forces of Dutch Elm disease and phloem necrosis, another disease. Photo courtesy of Illinois Natural History Survey.

DED *(from page 17)*

elimination from the vascular conduits through which the infecting fungus moves. Time is critical here and its significance depends on whether the treatment is designed to be preventive or curative.

If preventive, the chemical must be applied in early spring (late May or early June in most places) and remain effective over a period of 4-6 weeks (into July in most places).

If curative, initial strength and rapid mobility might be decisive factors to achieve rapid and complete toxicity to the fungus. But in postinfection application, complete toxicity to all fungus elements of an established infection is unresolved.

5. *Is Benlate phytotoxic?* In concentrations necessary to be effectively fungicidal, does it cause side effects damaging to plant tissues into which it must move as a systemic?

All reports indicate little or no phytotoxicity at levels well above those required. However, some damage is reported at unusually high dosages in applications both of emulsified and solubilized forms. Probably because the initial evidence of lack of significant phytotoxicity is so encouraging, this point has not yet been evaluated critically.

To the extent that foliar application by spraying continues to show promise for preventive control, a critical study here to establish threshold levels of phytotoxicity is essential. Also, in flushing of Benlate emulsions into drilled holes in bark and wood, with resulting encrustation of exposed tissue surface by precipitated particulate matter, there is some possibility of localized toxicity.

However, it may be difficult, to separate apparent toxicity from wound-tissue reactions and subsequent microbial colonization. Many such wounds in 1972 healed quickly; thus, localized tissue damage by chemical toxicity or trauma is not considered serious. In effect, Benlate appears to satisfy the requirement for relative non-phytotoxicity.

USE AND RESULTS

One of the most hopeful signs that a satisfactory systemic chemical may now be at hand, is the wide variety of research being done. Many pathologists are testing new techniques to put Benlate into vessels of elm, the main sites of initial infections and ultimate spread of the causal fungus throughout the tree.

When first used against Dutch elm disease, Benlate was incorporated into the soil to be absorbed by the root system of the tree. Its effectiveness by this method was based on sustained presence of the fungicide over long periods of time, in some cases exceeding a year, as well as on uniformity of distribution throughout the vascular systems of the trees. However, soil application is disadvantageous for many practical and economic reasons.

Foliar spray by mist blower at the rate of 8 pounds per hundred gallons of water was effective in preventing new infections both in Wisconsin and Michigan,[4] [5]but is not considered to have value against established infections.

Systemic fungicides applied to foliage have limited ability to move downward in woody tissues, where the causal pathogen becomes deeply established. Therefore it is not likely that infection could be arrested, unless the

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fungus were limited in its distribution to relatively small twigs when the chemical spray was applied. Thus, in spite of its promise, spraying is limited to prevention of infection, and has potential for environmental damage.

Stem injection of Benlate poses no environmental hazard. In addition, it is more promising against established infections than any other method. In most cases methods involve direct stem or root application of water emulsions of particulate matter, encapsulated "pills," or water-acid solubilized chemical; injections are by pressure, or gravity flow. In all cases. the chemical is introduced by mechanical devices directly to xylem vessels exposed by drilled holes or incisions.

The earliest successful stem injection technique involved the use of the Maujet injector. Thin metal tubes hammered into tree trunks to a precise depth, are designed to allow liquid flow directly to vessels exposed in the wood of the current season. With this method, success depends largely on precision of timing and positioning of tubes. Much success and many failures are reported.

From personal observations, certain disadvantages seem apparent. The method is time consuming and thus expensive; it delivers a limited amount of chemical; the emulsified chemical clogs the openings and prevents or delays absorption; feeding cups in place are subject to vandalism; and the method requires a degree of patience, understanding and precision not conducive to treatment of large numbers of trees.

In spite of this, many elms have been saved because of it, and modifications may bring enhanced efficacy. In practice, the method is most effective in prevention, but has limited success against established infections.

Perhaps the most exciting development in stem injection of Benlate was the recent use of solubilized material applied under pressure. Several laboratories have developed similar methods. In our cooperative research with the U. S. Forest Service, acid-solubilized Benlate is forced under pressure by nitrogen gas (40-70 psi) through tubing and metal feeder pipes into small incisions made by chisel in the outer one or two rings of the xylem. The fluid chemical, whose volume is based on tree diameter, moves into the tree in 20-30 minutes.

This technique has both advantages and limitations. Since the chemical is forced into the tree in a liquid form, there is a high probability of fast action, high toxicity, and wide distribution. However, it is time-consuming and costly as with the Maujet technique. Also, speed of distribution could be a liability rather than an asset, if the chemical is swept out of the tree too fast. In spite of high expectations for uniform distribution, there is some evidence suggesting difficulties here. The method was first fieldtested in 1972. Preliminary results indicate significant progress in arresting visible progress of disease, but final evaluations cannot be made until June or July in 1973.

A novel approach to stem injection was initiated in 1972 by the Elm Research Institute with which the writer is working cooperatively. Holes (½ in. diam., 2 inches deep) are drilled around the tree 6 inches apart. Iron fittings with hose nozzle attachments are screwed tightly into holes to a depth of 1-1½ inches. Hosing connecting all of the fittings is connected to a two-gallon, hand-pump garden-type spray can, then the injection is made under pressure up to 40 psi.

As with the Maujet treatment, the use of emulsified material results in conspicuous clogging of holes and vessels. Also, the bulk of the suspension is fed too deeply into the wood for maximum distribution into vessels of the current season, and most may be deposited in wood spaces of no significance for disease control. However, with solubilized Benlate, and improvement of the injection delivery, this method has much promise for the homeowner.

CURRENT RECOMMENDATIONS

But what is the commercial arborist, the municipal forester and the tree owner to make of all these new developments? How can the new information on chemical control be used to advantage? The evidence is clear that Benlate poses bright prospects for control, but caution is urged. It should be used experimentally within the provisions specified by the EPA in its approval: i.e., by trained and licensed arborists, as a productive spray or by stem injection through any method allowed by EPA. The following guidelines are suggested for maximum protection of elms not known to be diseased.

(It should be clear that all use of Benlate is still essentially experimental; these suggestions are based on limited but promising, data. Further critical research is essential before firm recommendations are warranted.)

1. Continue to practice thorough sanitation in areas of trees to be protected (i.e., eliminate dead, diseased or weakened elm wood in trees or on ground);

2. Apply dormant methoxychlor spray as recommended by USDA (i.e., at least before leaf emergence; before flower emergence is preferred);

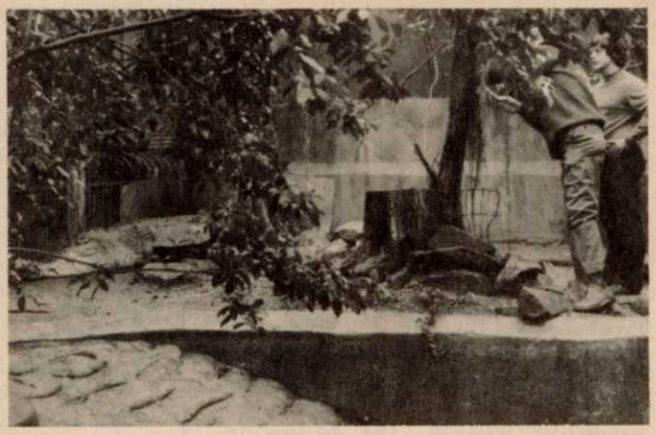
3. Sever mechanically or treat chemically potential root graft connections between closely-spaced (50 feet) trees.

4. Apply Benlate by one of the following methods:

a. Apply foliage spray of Benlate as recommended by University of Wisconsin (8 lbs. of formulated Benlate per 100

(continued on page 74)

Is it a pigeon? Maybe it's a chicken? No, it's Lew Kolb in the alligator corral.



Mike Davenport, assistant curator of reptiles, ventures into the pit with Lew. "If I head for the wall," says Mike, "don't ask questions, just follow." "Ok," replied Lew. "Just don't be in my way."

Beyond the Call of Duty . . . or Some People Will Do Anything for Money

Some tree men are called on to do the darndest things. Take Walt Money of Guardian Tree Experts, Inc., for instance.

Just last week he received a call from Jack Monday at the Washington National Zoo. Jack had a request for Walt to inject a few rubber trees with nutrients and insecticide using the Mauget injectors. Sounded simple enough, so Walt says "Sure, we'll do it."

One catch. The rubber trees were located on an island in the alligator pit. "You gotta be kidding!" cried Walt. Nope, came the reply.

Jack said there wasn't too much to fear, except for "Biggie," a 15-foot 1,000 pound crocodile. The week before, in a lightning move, he had gobbled up an unsuspecting pigeon who had landed six feet away. Walt said, "Has he eaten since?" Jack replied, "We're not sure. Roll call is tomorrow."

To make the reptiles as docile as possible, several water tanks were drained. Then like a true executive, Walt delegated the injection job to Lew Kolb.

"Someone had to take the pictures," said Walt coyly, standing behind the glass spectator windows. "Who else would believe this story."

Lew's in the last alligator pit now and he feels pretty confident. Not that he's ready for a wrestling match. No, he says, "but I wonder how alligator tree climbing shoes would feel."

While visions of pigeons and female crocodiles dance through "Biggie's" head, Lew does the fastest injection job in treeman history.

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gals. of water; 2-3 gals. per tree; mist blower recommended); or

b. Use injector tubes (Maujet type) with cups of about 2 oz. capacity; use Benlate as recommended by Virginia Polytechnic Institute and State University (2 lbs. per hundred gallons of water); or

c. Use drilled holes with nozzles, tubing and pressure spray can as recommended by the Elm Research Institute (2 lbs. per 100 gals. of water).

For therapy of diseased elms in early stages (not more than 10 percent crown visibility wilted), the following guidelines may be of interest, but little hope is currently offered for cure of such trees with chemical treatment by itself:

1. Prune the diseased branch back to the main trunk as quickly as possible; removal within 24 hours is recommended (this treatment is recommended only for single branch infections);

2. Stem inject with Benlate as indicated above with heavy application, concentrating on that side of the tree affected. If using the Maujet injector, make new injections two or three times at 10 day intervals.

As a final note of caution, chemical treatment should not be used as a substitute for sanitation, spraying, root graft treatment, or pruning out a diseas-

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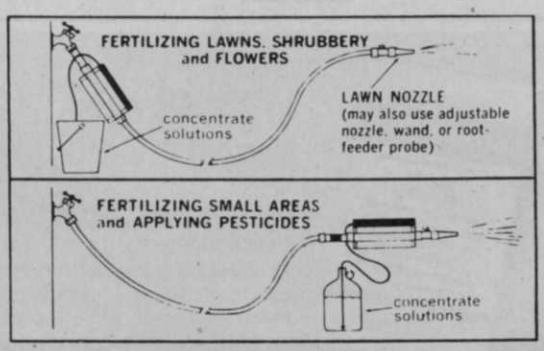
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ed branch, but as a supplement. Benlate and other systemic chemicals are on trial; prospects for control have never seemed better than at the present time, but only careful study and cautious evaluation can resolve the questions raised. In the final analysis, the record will speak for itself. □

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trimmings

LOOKING FOR A TREE JOB? Contact Edgar Emrich of Graceham, Md. He's planning to chip 15 to 20 acres of pines in his 60 acre pine grove. Seems that his pines have a great affinity for birds. Thousands of them. Millions of grackles, redwing blackbirds, starlings. They've been holding a fly-in, feather preening, coo festival in the pines since December. One big problem, however. Emrich didn't set up any facilities. The ground is now covered with droppings. In fact, it's like a student with many degrees—B.S., M.S. (more of the same), and PhD, (pilled higher and deeper). In late March, farmer Emrich took action. He organized a major bombardment to scare the birds away, in spite of the cries of birdlovers. Included in the arsenal were fireworks, propane cannon fire, amplified bird distress calls, and more. As many as 110 county, state and Federal officials, neighbors and citizen volunteers were on hand to help. After three invasions, Dr. Kenneth L. Crawford, state veterinarian and director of the bird-ridding project, reported a marked reduction. Emrich said that wasn't good enough. He's decided to put an end to the bird concert by chopping down the trees.

CANADIAN SCIENTISTS are dialing CFS 1020 in hopes of finding a way to treat Dutch Elm Disease (DED). CFS 1020 is a water-soluble derivative of benomyl fungicide. It is being injected into a tree's sap system through the roots. The technique was developed over the past three years by the Canadian Forestry Service of Environment Canada with the aid of the faculty of forestry at the University of Toronto. The treatment is supplementary to sanitation measures. What does it do? According to D. N. Roy, a biochemist and associate professor of forestry at the University of Toronto, the compound would provide resistance against DED. Three years of tests on trees have proved the theory to be 100 percent true. It's still too early to make any predictions on how long the resistance will be exhibited.

FINGER BLIGHT has hit the Green Industry. There is no known environmental protection chemical to control it. Nor is there any mechanical device that is 100 percent effective. It occurs in nearly every place of business. It affects employers and employees alike, although employees are the most susceptible. Likewise, those outside your employ have no immunity. Best known control to the disease—better known as pilfering or stealing—is outsmarting the victim. When on the job, keep your eyes open and your property within easy reach. When off the job, keep equipment and supplies in secured storage areas. Until more severe penalties can be enacted by lawmakers, finger blight will continue on its carousing, contagious course.

VELOCIPEDES are back. And the Federal government is finding new ways to cope with them. The Federal Highway Administration recently announced expenditures of Federal-aid highway funds for the construction of bikeways and pedestrian walkways outside the normal highway right-of-way along Federal-aid highways. This means we could easily see cyclists peddling along bikeways adjacent to interstates. Just think of the fun John Doe and his family can have. Four bikes and a Big Wheel tooling down a bike path bound for Chicago. Just think of the extra business this may generate in keeping encroaching vegetation in check.

RULE OF REASON must interplay into our rationale in dealing with our environmental idealism and our attitude toward risk, charges Agriculture Secretary Earl L. Butz. "If we are to continue to reap the benefits of technology in a time when the limits of our resources become more clear each day, we must first come to grips with just how we shall proceed . . . Man cannot have all he wants to consume—and at the same time maintain a super-pure environment and a completely risk-free society.

BEWARE OF BLACK WALNUT trees. They're highly prized for the nuts and the timber, but scorned in another way. According to Harold Davidson of Michigan State University, the roots of the black walnut contain a phytotoxin, Juglone. This compound is not secreted into the soil. But when susceptible plants touch the roots, injury occurs. The range of the toxic zone is the spread of the root system, he says. The average range is 50 to 60 feet, although it can be as large as 80 feet. Highly susceptible plant include many evergreens, azaleas, rhododendrons, as well as some vegetables. Landscape arborists should advise clients that this tree is not desirable on small lots.

"I DON'T NEED some bunch of dogooder nuts telling me what's good to breathe," says Rep. Billy Williamson. "And I don't want a bunch of environmentalists and Communists telling me what's good for my life and family." In a UPI story from Austin, Tex., Williamson urged a constitutional convention committee to reject a proposal that would allow citizens to sue state agencies and public officials that do not properly administer state environmental laws. "I think we are all willing to have a little bit of crud in our lungs and a full stomach nothing to eat," he said.

WEIRD ORDINANCES continue to draw wry smiles. Seattle, Wash. has one which calls for 90 days in jail for anyone who lets a thistle grow on his land, according to United Press International. Like the law in Delaware and other eastern states which prohibits Johnsongrass, one of the biggest offenders would be the state, itself. State owned land including highway rights-of-ways would likely receive the first ticket.

WHO'S HOGGING BEACH property? The Commander-In-Chief of the Federal government discovered in 1970 that he was. In February of that year, President Nixon was bearfooting it along the beach near his San Clemente home when he discovered that nobody was watching. Why? All the land up and down the beach, for miles, was Federal land, part of Camp Pendleton and owned by the Navy. No access. No tresspassing. Forbidden to enter. The creative juices started to flow and the result is the Legacy of Parks. Today, 400 properties, covering 61,476 acres and valued at over $165 million, have been made available in all 50 states, DC, Puerto Rico, Guam and the Virgin Islands. The Bureau of Outdoor Recreation estimates that over 70 percent of these properties are located in or near urban areas.

LEARN FROM EACH OTHER is one way to make an industry grow. Arborist Robert A. Bartlett passes along these tips for you to try with your customers. Remind them that repairs or replacements to trees damaged by unusual icing conditions can be included in income tax returns and insurance claims. Best evidence of the extent of damage is before and after photos. If before photos are not available, Bartlett says to photograph the best possible view of the damage. It is a good idea to exercise the camera before the leaves appear.

SLEEPING AT THE WHEEL accounted for the most common cause of accidents involving motor vehicles, says the Bureau of Motor Carrier Safety. Sixty-nine percent of all accidents were classed into this group. Next biggest class of accidents was due to driving while under the influence of alcohol. Other factors included heart attacks, blackouts, and drug usage.

STRANGE AS IT SEEMS, but the Texas Highway Department engineers plan to use plastic grass in shaded sections of a newly constructed, double-decked segment of the Interstate 35 freeway through Austin. They say there isn't sufficient sun for the real thing to grow. The fake green stuff will break the monotony of dull concrete, they say.

For More Detail on Rain Bird Corp. Circle (132) on Reply Card
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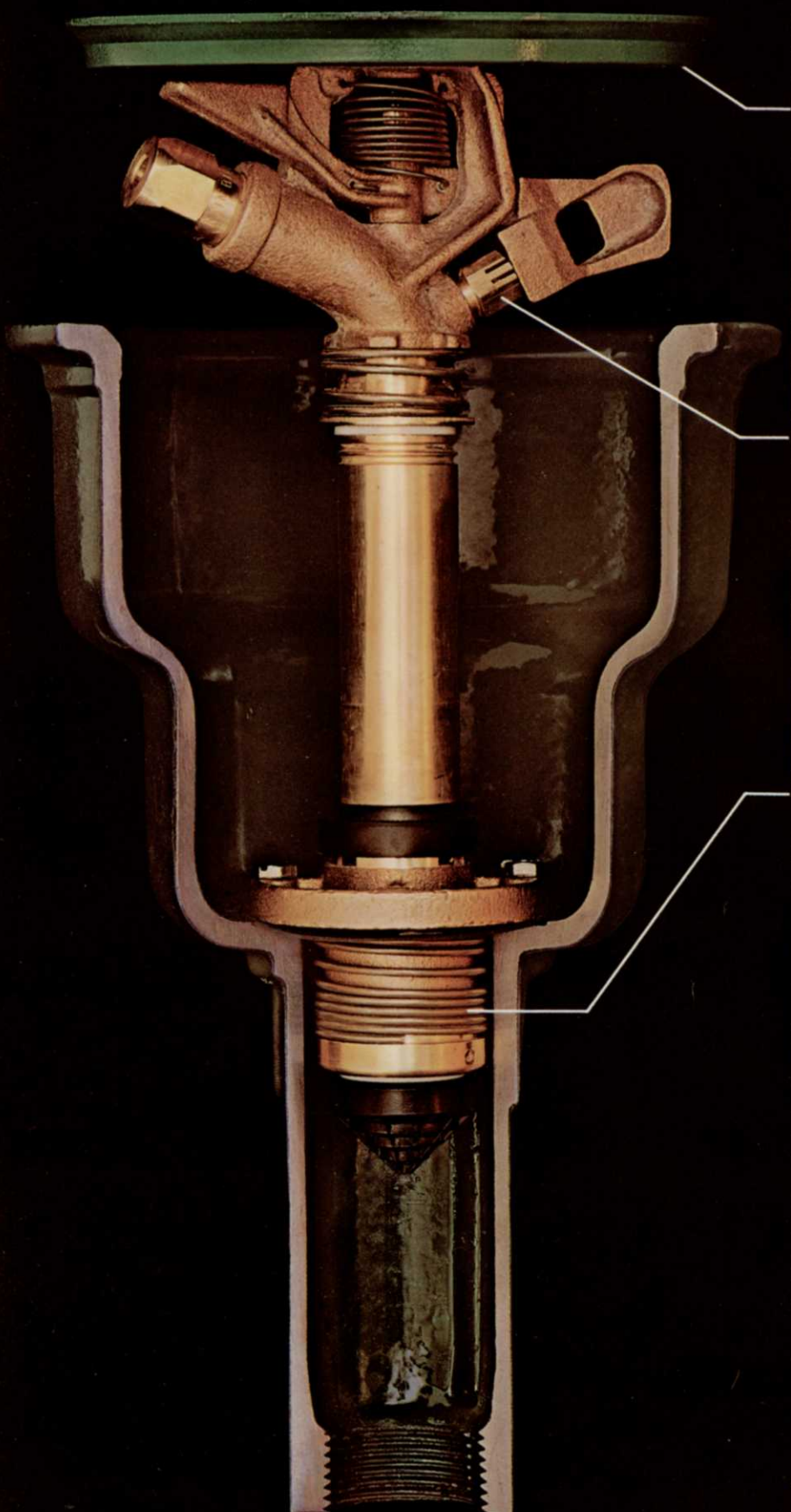
And the green grass grows all around



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Baron (left) and Merion 16 days old.

Note rhizomes after only 8 months.

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